

APPENDICES





ACRONYMS AND GLOSSARY

ACRONYMS

ACOE	U.S. Army Corps of Engineers	NHCP	New Hampshire Coastal Program
ASNH	Audubon Society of New Hampshire	NHDAMF	New Hampshire Department of Agriculture, Markets and Food
BPA	Base Program Analysis (Regulation and Management of New Hampshire's Estuaries)	NH DES	New Hampshire Department of Environmental Services
CAA	Clean Air Act	NH DHHS	New Hampshire Department of Health and Human Services
CDBG	Community Development Block Grant	NH DOT	New Hampshire Department of Transportation
CICEET	The Cooperative Institute for Coastal and Estuarine Environmental Technology	NH DRED	New Hampshire Department of Resources and Economic Development
CSPA	Comprehensive Shoreland Protection Act	NHEP	New Hampshire Estuaries Project
CSRC	(UNH) Complex Systems Research Center	NH F&G	New Hampshire Fish and Game Department
CWA	Clean Water Act	NH OSP	New Hampshire Office of State Planning
ECOSTAFS	Estuarine Contaminant Status and Forecasting System	NHTOA	New Hampshire Timberland Owners Association
EPA	U.S. Environmental Protection Agency	NMFS	National Marine Fisheries Service
FDA	Food and Drug Administration	NOAA	National Oceanic and Atmospheric Administration, U.S. Department of Commerce
GBNERR	Great Bay National Estuarine Research Reserve	NPDES	National Pollutant Discharge Elimination System
GBRPP	Great Bay Resource Protection Partnership	NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
GBC/W	Great Bay/Coast Watch	NROC	Natural Resource Outreach Coalition
GPAC	Global Programme of Action Coalition	NSSP	National Shellfish Sanitation Program
GRANIT	Geographically Referenced Analysis and Information Transfer System (the NH State Geographic Information [GIS] System)	RCCD	Rockingham County Conservation District
GSDI	Granite State Designers and Installers	RPC	Rockingham Planning Commission
HUD	U.S. Department of Housing and Urban Development	SCCD	Strafford County Conservation District
ISSC	Interstate Shellfish Sanitation Conference	SPACE	Statewide Program of Action to Conserve our Environment
JEL	(UNH) Jackson Estuarine Laboratory	SPNHF	Society for the Protection of New Hampshire Forests
LCIP	Land Conservation Investment Program	SRLF	State Revolving Loan Fund
LWCF	Land and Water Conservation Fund	SRPC	Strafford Regional Planning Commission
MFCMA	Magnuson Fisheries Conservation and Management Act	SSCA	State Shellfish Control Authority
MPO	Seacoast Metropolitan Planning Organization (MPO) regional transportation planning group	TEA-21	Transportation Equity Act for the 21st Century
NAI	Normandeau Associates, Inc.	UNH	University of New Hampshire
NEMO	Non-point Education for Municipal Officials	USCG	U.S. Coast Guard
NEP	National Estuary Program	USDA	U.S. Department of Agriculture
		USFWS	U.S. Fish and Wildlife Service
		USDOT	U.S. Department of Transportation
		USGS	U.S. Geological Survey

GLOSSARY

Administrative Rule

State of New Hampshire regulations that more specifically describe the implementation of a state statute.

Ambient

Refers to overall, general conditions of place. For example, ambient water quality monitoring programs are designed to measure overall water quality.

Anadromous Fish

A species, such as salmon, alewives, or bluebacks, that is born in freshwater, spends a large part of its life in the sea, and returns to freshwater rivers and streams to reproduce.

Aquaculture

The cultivation of aquatic organisms such as fish or shellfish in a natural or artificial growing area.

Aquatic Macroinvertebrate

Organisms which lack a backbone and spend part or all of their life in lakes, streams, ponds, marshes and puddles. These organisms help maintain the health of the water ecosystem by eating bacteria and dead, decaying plants and animals, and are often used as an indicator of the health of a water body. Examples include stoneflies, mayflies, caddisflies, and other insects.

Atmospheric Deposition

The transport of pollutants such as nutrients or toxins from the air onto land or water. Atmospheric deposition can be “dry” deposition (simple settling of the pollutant) or “wet” deposition (transport of pollutants by means of precipitation).

Base Program Analysis

An NHEP-sponsored study of existing estuarine management programs, focusing on local and state regulatory and non-regulatory programs. Results of the study were used to guide the development of the *NHEP Management Plan*.

Benthic

Associated with the bottom, or substrate, of a waterbody.

Best Management Practices (BMPs)

Methods for preventing or reducing the pollution resulting from an activity. BMPs can be structural (e.g., construction of a detention basin) or non-structural (e.g., periodic street sweeping) in nature.

Biochemical Oxygen Demand (BOD)

A measure of the organic material that can be readily oxidized through microbial decomposition, consuming oxygen dissolved in water. BOD is often used to assess the effects of a discharge, especially sewage.

Biodiversity

The number and abundance of species found within a common environment.

Biomonitoring

A type of environmental monitoring that utilizes the presence and abundance of organisms as an indicator of environmental quality, as opposed to more traditional physical and chemical measurements. Aquatic insects are commonly used in freshwater (stream) biomonitoring programs.

Biota

All living organisms that exist in a region.

Biotoxin

A poisonous compound produced by plants and animals, including microorganisms. Biotoxins produced by marine microorganisms often accumulate in various species of fish and shellfish.

Combined Sewer Overflow (CSO)

A pipe that during storms discharges untreated wastewater from a sewer system that carries both sanitary wastewater and stormwater. The overflow occurs because a system does not have the capacity to transport and/or treat the increased flow caused by stormwater runoff.

Conservation Commission

A municipal body concerned with the proper utilization and protection of the natural resources of a city or town. Conservation commissions undertake research projects of local land and water areas, and compile indexes of all open space, wetlands, and natural, aesthetic or ecological areas within the city or town. Conservation commissions often comment on development applications to state and/or local regulators for work in sensitive natural areas.

Critical Lands Analysis

An NHEP-sponsored study designed to identify lands in the 19 coastal towns with high natural resource value that may also be threatened by future development. This GIS study 1) identified vacant, potentially developable lands; 2) assessed vacant lands' favorability for development; 3) identified lands with multiple natural resource value, and 4) identified "high value" vacant lands that also exhibited favorable development characteristics.

Depuration

A process of reducing the pathogenic organisms in shellfish by using a controlled, purified aquatic environment as a treatment process.

Drainage Basin

The land that surrounds a body of water and contributes freshwater, either from streams, groundwater, or surface runoff, to that body of water.

Dredging

The removal of sediments from a river, stream, or estuary, typically done for navigation purposes.

Escherichia coli (E. coli)

A type of bacteria used to determine the quality of surface waters in the State of New Hampshire. State law (RSA 485-A:8 (II)) stipulates that "Class B" waters (which include all tidal waters) shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 126 *Escherichia coli* per 100 milliliters, or greater than 406 *Escherichia coli* per 100 milliliters in any one sample. Designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 47 *Escherichia coli* per 100 milliliters, or 88 *Escherichia coli* per 100 milliliters in any one sample, unless naturally occurring.

Ecosystem

The collection of organisms and their non-living environment in a given place, each influencing the other and both necessary for the maintenance of life.

Eelgrass

A flowering, grass-like marine plant that grows in sand and mud. Eelgrass beds are an important habitat and nursery for fish, shellfish, and waterfowl.

Effluent

The outflow of water, with or without pollutants, usually from a pipe.

Enterococci

A type of bacteria used to determine the quality of tidal surface waters in the state of New Hampshire. State law (RSA 485-A:8(V)) stipulates that tidal waters utilized for swimming purposes shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 35 enterococci per 100 milliliters, or 104 enterococci per 100 milliliters in any one sample, unless naturally occurring.

Estuary

A semi-enclosed embayment where freshwaters from rivers and streams mix with salt water from the ocean. Estuaries are extraordinarily productive and diverse environments because of a unique set of conditions that create unusually nutrient-rich, protected waters. Many biologists consider estuaries among the most productive environments on earth.

Eutrophication

The process of nutrient enrichment in aquatic ecosystems. In marine systems, eutrophication results principally from nitrogen inputs from human activities such as sewage disposal and fertilizer use. The addition of nitrogen to coastal waters stimulates algal blooms and growth of bacteria, and can cause broad shifts in ecological communities present and contribute to low dissolved oxygen levels and fish kills.

Fecal Coliform

Bacteria that are present in the intestines and feces of warm-blooded animals and that are often used as indicators of the sanitary quality of water. This type of bacteria is used to determine the sanitary quality of shellfish growing waters in the State of New Hampshire.

Geographic Information Systems (GIS)

A computer system capable of assembling, storing, manipulating, and displaying/mapping geographically referenced information (i.e. spatial data). Examples of information stored in a GIS would be locations of roadways, waterbodies, wetlands, pollution sources, town boundaries, public parks, and many others.

Habitat

The setting in which a particular plant or animal lives, feeds, finds shelter, and reproduces.

Harmful Algal Blooms

An event of rapid growth of certain species of algae and other microbes which can be harmful to marine life and to humans under certain conditions. Some kinds of red tides are examples of harmful algal blooms.

Head-Of-Tide

The landward limit of tidal flow. In coastal New Hampshire, the head of tide on most major rivers is marked by a dam.

Heavy Metals

A group of elements that is present in the environment from natural and anthropogenic sources and can produce toxic effects. This group includes mercury, copper, chromium, cadmium, zinc, and arsenic.

Illicit Connections

Sanitary sewer lines that are connected to stormwater drainage pipes, resulting in the discharge of untreated sewage to surface waters.

Impervious Surface

A surface such as asphalt, concrete pavement, or rooftops that cannot be easily penetrated by water.

Invasive Species

Especially competitive and prolific non-native, introduced species of plants or animals. Invasive species reduce the overall biodiversity of an ecosystem, and may cause complete displacement of native species.

Leach Field

A shallow sewage disposal area, often constructed of stone and pipe and covered with topsoil, designed for the final disposal of septic tank effluent in the underlying soil.

Macroalgae

Large, multicellular algae which often attach themselves to rocks or other substrates in the marine environment. Examples include kelp and rockweed.

Master Plan

A report or set of statements and land use and development proposals with accompanying maps, diagrams, charts, and descriptive matter designed to show as fully as is possible and practical a municipal planning board's recommendations for the desirable development of the territory legally and logically within its planning jurisdiction. The contents of a master plan are described in RSA 674:2.

National Estuary Program (NEP)

A state grant program within the U.S. Environmental Protection Agency established to designate estuaries of national significance and to assist local stakeholders in the preparation of a *Comprehensive Conservation and Management Plan* for the designated estuaries.

National Pollutant Discharge Elimination System (NPDES)

A requirement in the federal Clean Water Act for dischargers to obtain permits, which place limits on the levels of pollutants that may be discharged.

Natural Resources Outreach Coalition

A group of outreach and education specialists committed to helping local decision makers integrate the principles of natural resource-based planning into their planning processes. The Coalition develops a coordinated outreach effort tailored to the natural resource and growth issues and needs of each interested community, and provides access to more technical natural resource management and planning resources. Coalition members include: UNH Cooperative Extension, and Cooperative Extension/Sea Grant; New Hampshire Coastal Program; NH Fish and Game Department - Great Bay National Estuarine Research Reserve; NH Department of Environmental Services; Rockingham Planning Commission and Strafford Regional Planning Commission; Rockingham and Strafford County Conservation Districts; and the New Hampshire Estuaries Project.

Non-Point Source Pollution

Pollution that is generated over a relatively wide area and dispersed rather than discharged from a pipe. Common sources of non-point pollution include stormwater and agricultural runoff, and failed septic systems.

Nutrients

Essential chemicals needed by plants and animals for growth. Excessive amounts of nutrients – nitrogen, and phosphorus, for example – can lead to degradation of water quality and growth of excessive amounts of algae. Some nutrients can be toxic at high concentrations.

Paralytic Shellfish Poisoning (PSP)

A life-threatening syndrome caused by eating shellfish that are contaminated with toxins produced by certain kinds of microscopic algae. Symptoms include tingling, numbness, giddiness, drowsiness, fever, rash, staggering, and others. Not all cases are fatal, but the most severe cases result in respiratory arrest within 24 hours of consumption of the toxic shellfish. PSP is prevented by large-scale proactive monitoring programs to assess toxin levels in shellfish and rapid closure to harvest of suspect or demonstrated toxic areas.

Pathogen

Any organism, but particularly bacteria and viruses, that causes disease. For example, human pathogens in shellfish can cause hepatitis and intestinal disorders.

Performance Standards

Federal, state, or local codified specifications that condition development activities to limit the extent to which a structure or activity may affect the immediate environment.

Petroleum Hydrocarbons

The mixture of hydrocarbons normally found in petroleum; includes hundreds of chemical compounds.

Point Source Pollution

Pollution originating at a particular place, such as a sewage treatment plant, outfall, or other discharge pipe.

Polycyclic Aromatic Hydrocarbons (PAHs)

A class of complex organic compounds, some of which are persistent in the environment and cause cancer. PAHs are commonly formed by the combustion of petroleum products such as gasoline, and often reach waterbodies through atmospheric deposition or roadway runoff.

Polychlorinated Biphenyls (PCBs)

A series of hazardous compounds used for a number of industrial purposes. PCBs are toxic to some marine life in very low concentrations and are known to cause skin diseases and even death in humans at higher concentrations. PCBs do not decompose easily in the environment, and they can concentrate through the food chain as larger animals eat a number of smaller animals that are contaminated.

Primary Treatment

Physical processes used to substantially remove floating and separable solids in wastewater. This process can include screening, grit removal, and sedimentation.

Pumpout Facility

A fixed or mobile system or device used to remove sewage from holding tanks in boats.

Red Tide

A phenomenon where certain species of microscopic marine plants with reddish pigments grow very fast and “bloom” into dense, sometimes visible patches near the surface of water. The microscopic plants associated with red tides are often harmless to humans; however, a small number of species produce potent neurotoxins that can be harmful or fatal. A harmful red tide that often occurs off New England coastal waters causes Paralytic Shellfish Poisoning (PSP).

Relay

The process of transferring shellfish from polluted growing areas to clean water areas for the purpose of reducing pathogens or poisonous or deleterious substances from the shellfish, using the ambient environment as the treatment process.

Revised Statutes Annotated (RSA)

New Hampshire state laws.

Riparian

Of, on, or pertaining to the bank of a river, or of a pond or small lake.

Runoff

The part of precipitation that travels overland and appears in surface streams or other receiving water bodies.

Salt Marsh

A type of wetland whose vegetation, hydrology, and soils are influenced by periodic inundation of tidal waters. Salt hay and salt cordgrass are common on NH salt marshes.

Sanitary Survey

A written evaluation report of all environmental factors, including actual and potential pollution sources, which have a bearing on the water quality in a shellfish growing area.

Secondary Treatment

The process used to reduce the amount of dissolved organic matter and further reduce the amount of suspended solids and coliform bacteria in wastewater.

Septic System

Any sewage disposal or treatment system, other than a municipally-owned and operated system, which receives either sewage and/or other wastes. A typical septic system in New Hampshire would include a septic tank and a leach field.

Septic Tank

A watertight settling unit, often made of concrete, that receives the discharge of sewage from a building. Septic tanks are designed to substantially remove all separable solids so as to permit the retention of scum and sludge, digestion of the organic matter, and discharge of the liquid portion to a leach field.

Sewage

Liquid or solid waste that is transported to a wastewater treatment plant for processing, or is transported to a septic system for treatment.

Site Specific Program

A program within the NH Department of Environmental Services, established by RSA 485-A:17, which regulates projects that significantly alter the characteristics of the terrain in such a manner as to impede the natural runoff or create an unnatural runoff.

Storm Drain

A system of gutters, pipes, or ditches used to carry stormwater from surrounding lands to streams, ponds, estuaries, or other low-lying areas. Storm drains carry a variety of pollutants such as bacteria, sediment, oil, and antifreeze which enter the system through runoff, deliberate dumping, or spills. This term also refers to the end of the pipe where the stormwater is discharged.

Stormwater

Precipitation that is often routed into drain systems in order to prevent flooding. Large expanses of roadways, parking lots, rooftops, and other impervious surfaces can result in large amounts of stormwater during a rainstorm.

Suspended Solids

Organic or inorganic particles that are suspended in and carried by the water. The term includes sand, mud, and clay particles as well as organic solids in wastewater.

Swales

Vegetated areas used in place of curbs or paved gutters to transport stormwater runoff. They also can temporarily hold small quantities of runoff and allow it to infiltrate into the soil.

Technical Characterization Document

NHEP-sponsored study and summary of existing environmental data on the state's estuaries, focusing on outlining status and trends of estuarine water quality and natural resource condition. Results of the study were used to guide the development of the *NHEP Management Plan*.

Tertiary Treatment

The wastewater treatment process that exceeds secondary treatment; may include nutrient or toxic removal.

Tidal Buffer Zone (TBZ)

An area extending landward 100 feet from the highest observable tide line. Certain activities in this area require a permit from the NH Department of Environmental Services Wetlands Bureau.

Total Maximum Daily Load (TMDL)

Method used by EPA and state agencies to analyze and reduce pollutants discharged into impaired water bodies.

Toxic

Poisonous, carcinogenic, or otherwise directly harmful to life.

Toxin

A substance which is poisonous, carcinogenic, or otherwise directly harmful to life.

Ultraviolet (UV) Disinfection

A method to disinfect wastewater treatment plant effluent. The process involves irradiating effluent with ultraviolet light to kill pathogenic organisms. This method is often used as an alternative to chlorine disinfection.

Wastewater

Water that has come into contact with pollutants as a result of human activities and is not used in a product, but discharged as a waste stream.

Wastewater Treatment Facility (WWTF)

Treatment facility or group of treatment devices which treats domestic or combined domestic and industrial wastewater through alteration, alone or in combination, of the physical, chemical, or bacteriological quality of the wastewater and which dewateres and handles sludge removed from the wastewater.

Watershed

The land that surrounds a body of water and contributes freshwater, either from streams, groundwater, or surface runoff, to that body of water.

Wetlands

Areas that are inundated or saturated by water at a frequency and duration sufficient to support a prevalence of vegetation adapted to such conditions. Examples of wetlands include both freshwater and salt marshes, swamps, and bogs.

MANAGEMENT PLAN DEVELOPMENT AND PUBLIC INVOLVEMENT

A2

ORGANIZATION OF THE NHEP AND SELECTION OF ISSUES

In **July 1995**, the US Environmental Protection Agency accepted the nomination of New Hampshire Estuaries for inclusion in the National Estuary Program. Work on the New Hampshire Estuaries Project began in the **fall of 1995** when a cooperative agreement for project start-up was developed and signed. In **November 1995** the NHEP Management Committee was formed and charged with running the project and developing the *Management Plan*.

One of the Management Committee's first tasks was to review the nomination submitted by the state of New Hampshire. The nomination proposed a focus on shellfish resources as an indicator of water quality for developing the *Management Plan*. Committee members thought shellfish would be a useful and sensible indicator, but that the *Management Plan* should focus more on water quality in order to appeal to a broader audience and more stakeholders.

NHEP staff held a series of four public forums, attended by more than 40 people, in Durham, Portsmouth, Seabrook, and Concord in **January 1996**. The purpose of these forums was to gather input on NHEP's proposal to focus on water quality and use shellfish as an indicator of environmental quality. Attendees generally agreed that in the interest of accomplishing environment benefits the project should limit its focus, and that focusing on water quality and shellfish made sense. With that endorsement the Management Committee and NHEP staff began work on formulating a work plan for the project's first year.

The Management Committee developed the draft work plan during the **spring of 1996**. This work plan was distributed to interested organizations and individuals in preparation for the NHEP's first Public Estuaries Conference in **June 1996**, held at the Seacoast Science Center and attended by almost 100 people. The purpose of this conference was to gather more public input on the project's proposed focus on water quality and shellfish, and to gather input on the NHEP Year One work plan, proposed organizational structure, and other issues. After much discussion, a majority of those in attendance approved of the project's focus on water quality and shellfish.

After the June 1996 conference the Management Committee amended the draft Year One work plan and formulated a Conference Agreement document describing three years of milestones and activities for *NHEP Management Plan* development. The NHEP became official in **July 1996**, when state and federal officials signed the Conference Agreement.

Following the advice received at the June 1996 Conference, the NHEP Conference Agreement called for Advisory Teams to be formed for the topics of water quality, shellfish/living resources, natural resource regulation/land use, and public outreach. The main functions of the Advisory Teams were to oversee specific NHEP projects, assist in *Management Plan* development, and advise the Management Committee. In the **fall of 1996** interested organizations and individuals were invited to join these teams, and membership on NHEP project teams remained open to anyone interested for the duration of the NHEP's three years of planning. New members were continually solicited through newsletter articles, various meetings with Seacoast municipal officials and environmental groups, Great Bay Estuary Boat tours for state/local officials in July 1998 (83 in attendance), and at NHEP public events such as meetings of the NH

Environmental Network Conference (November 1997, 68 in attendance; January 1999, 67 in attendance).

Throughout **winter and spring of 1997** the NHEP staff, project teams, and Management Committee worked to implement the various activities in the Year One work plan. Many activities in the work plan involved gathering new information about the estuaries needed to develop or refine the project's list of priority environmental issues to be addressed in the *Management Plan*. In the spring of 1997 project participants began formulating a Year Two work plan. In **June 1997** the Management Committee and Project Teams held a joint work session to refine the priority issue list and the Year Two work plan. The Year Two work plan, submitted to EPA in **July 1997**, outlined a process to develop the *Management Plan* and continue collecting information about the environmental condition of the estuaries. However, implementation was delayed while the Management Committee discussed the priority issues list and content of the *Management Plan*. The Committee and EPA reached agreement on these issues in **October 1997**. The agreement stipulated that while the main focus of the NHEP and the *Management Plan* would continue to be on the issues of water quality and shellfish resources, the *Management Plan* would also summarize information and key actions for other environmental issues such as wildlife habitat and land conservation. The Year Two work plan was revised to reflect the agreement, and implementation of the Year Two work plan and development of the *Management Plan* began in the **winter of 1998**.

MANAGEMENT PLAN DEVELOPMENT

In January 1998 the NHEP hired the UNH Program on Consensus and Negotiation to facilitate development of the *NHEP Management Plan*. Initial tasks included having the NHEP Project Teams formulate lists of goals and objectives for the themes of water quality, land use, shellfish resources, and public outreach and education. To formulate goals, participants were asked to envision the estuaries in the most desirable possible condition by the end of the NHEP's planning horizon of the year 2005. The parts of this "vision" were grouped into categories, and a goal developed for each. The agreed-upon goals were further refined into specific objectives. These goals and objectives were presented in **June 1998** at a public conference held at the Seacoast Science Center in Rye (attended by 96 people).

With suggestions gathered from the June 1998 public meeting, the Project Teams brainstormed specific strategies to achieve each objective. These strategies were presented at another public conference in **November 1998** at the Seacoast Science Center in Rye (attended by 52 people), where small groups worked to amend the strategies and choose those most likely to achieve the intended goals and objectives. These priority strategies were then reviewed and amended by the Project Teams through **winter 1999**. Once a list of key strategies was agreed to, the Project Teams began preparing detailed action plans describing the "who, what, where, when, why, and how much" needed to implement the key strategies. During this period the NHEP also hired the Audubon Society of New Hampshire to work with interested organizations to develop goals, objectives, and strategies for the topics of wildlife habitat and land conservation. Members of the public were invited to comment on this work at a public meeting held in **May 1999**. Comments from the 33 people attending were incorporated into the development of action plans for these issues.

By the **spring of 1999** the Project Teams completed draft action plans for the key strategies. Over **the summer of 1999** the Management Committee completed a review of all 98 action plans. The revised Action Plans were then incorporated into the first draft of the *NHEP Management Plan*.

The release of the draft *Management Plan* in **December 1999** marked the conclusion of the primary planning phase of the project. Two public hearings were held in January, 2000 at the Seacoast Science Center in Rye and at the New England Center in Durham. The public was notified through press releases, legal notice, direct mail and Great Bay Radio. State senators and local officials received direct mailings. Public comments were accepted until 2/1/00. This final *Management Plan* was revised following public comment and review. After approval, the final *Management Plan* will move into the implementation phase. The Management Committee will work to initiate, oversee, track, evaluate, and update implementation of the Action Plans.



This Appendix documents the results of the NHEP's planning efforts to develop *Management Plan* goals, objectives, and strategies for the themes of water quality, shellfish resources, land use, habitat protection and restoration, and outreach. (The planning process itself is described in Appendix 2.)

Goals are general statements describing the NHEP's 'vision' for the estuaries in 2005. **Objectives** state the steps needed to reach the goals. **Strategies** are specific actions that could or should be taken to achieve the objectives. This Appendix records all the ideas that were considered for inclusion in the *Management Plan*. Goals, objectives, and strategies are presented as either Key or Other.

Key Goals, Objectives, and Strategies are those that received a large number of votes at NHEP public meetings and/or were deemed critical by the NHEP Management Committee and project team members. **Other Goals, Objectives, and Strategies** represent ideas that were considered, but did not receive a high number of votes at public meetings and/or were not deemed critical by the NHEP Management Committee and team members. The Action Plans included in the main body of the *Management Plan* were developed from the Key Strategies. The Key Objectives are those which will be used to measure the effectiveness of the Action Plans. To see the list of Key Goals, Objectives, and Strategies, see pp. 3-7 to 3-17. The Other Goals, Objectives, and Strategies are included in this appendix and may be reviewed and incorporated at the time of the 5-year *Management Plan* evaluation.

WATER QUALITY GOALS, OBJECTIVES AND STRATEGIES

KEY GOAL A

Ensure the New Hampshire estuarine waters and tributaries meet standards for pathogenic bacteria, including fecal coliform, *E. coli*, and Enterococci:

Key Objective A1

Achieve water quality in Great Bay and Hampton Harbor that meet shellfish harvest standards (14 counts of fecal coliform/100 ml) by 2010.

Key Objective A2

Minimize beach closures due to failure to meet water quality standards for tidal waters (Enterococci levels not exceeding 104 counts/100 ml. in any one sample).

Key Objective A3

Increase water bodies in the NH coastal watershed designated 'swimmable' by achieving state water quality standards (E. coli levels not exceeding 406 counts/100 ml in any one sample. For designated beaches, E. coli should not exceed 88 counts/100 ml).

Key Objective A4

Reduce the number of known illicit connections in the NH coastal watershed by 50% by 2010.

Key Objective A5

Achieve 50% reduction of known illegal discharges into Great Bay, Hampton Harbor and the tributaries by 2010.

KEY GOAL B

Ensure that New Hampshire estuarine waters, tributaries, sediments, and edible portions of fish, shellfish, other aquatic life, and wildlife meet standards for priority contaminants such as, metals, PCBs, PAHs. And oil and grease.

Key Objective B1

Develop baseline of toxic impacts on ecological and human health by tracking toxic contaminants in water, sediment, and indicator species: blue mussels (Gulfwatch); tomcod, lobsters and winter flounder (Coastal 2000).

Long-term:

Reduce toxic contaminants levels in water, sediment and indicator species so that no levels persist or accumulate according to:

- FDA guideline levels
- State water standards in Env-Ws 1700
- Sediment levels below ER-M levels

For copies of specific standards, see the following references:

FDA guidelines:

“Action Levels, Tolerances and Other Values for Poisonous or Deleterious Substances in Seafood,” found at www.issc.org. Look under Nssp Program, “Guide for the Control of Molluscan Shellfish”, “Guidance Documents Chpt.4.”

Env-Ws 1700:

Found at www.des.state.nh.us. Look under “Administrative Rules.”

Sediment ER-M levels:

NOAA. 1989. Standard Analytical Procedures of the NOAA National Analytical Facility. NOAA Tech. Mem. NMFS F/NWC-92, 1986-89. National Status and Trends Program, National Oceanic and Atmospheric Administration, NOAA N/OM32, 11400 Rockville Pike, Rockville, MD 20852. 2nd ed.

Other Objective B2

No levels that are injurious or inimical to plants, animals, humans, or aquatic life.

KEY GOAL C

Ensure the New Hampshire estuarine waters and tributaries meet standards for organic and inorganic nutrients, specifically nitrogen, phosphorous, chlorophyll A (freshwater), dissolved oxygen, and biological oxygen demand (BOD):

Key Objective C1

Maintain inorganic nutrients, nitrogen, phosphorous and chlorophyll a in Great Bay, Hampton Harbor and their tributaries at 1998-2000 NERR baseline levels.

Key Objective C2

Maintain organic nutrients in Great Bay, Hampton Harbor and their tributaries at 1994-1996 NERR baseline levels.

Key Objective C3

Maintain dissolved oxygen levels at:

- > 4 mg/L for tidal rivers
- > 6 mg/L for embayments (Great Bay and Little Bay)
- > 7 mg/L for oceanic areas (Hampton Harbor and Atlantic Coast)

Key Objective C4

Maintain NPDES permit levels for BOD at wastewater facilities in the NH coastal watershed.

Other Objective C5: Nitrogen

Total Kjeldahl Nitrogen (TKN): No increase
Nitrate Nitrogen: No increase
Ammonia nitrogen: Freshwater acute: 23.84 mg/l
Freshwater chronic: 2.05 mg/l
Nitrate: Water and fish ingestion: 10 mg/l

Other Objective C6: Phosphorus

Total phosphorus - No increase
No discharge that would encourage eutrophication

Other Objective C7: Chlorophyll a (freshwater)

Greater than 30mg/L: Does not support swimming
Between 20 and 30 mg/L: Partially supports swimming

Other Objective C8: Dissolved oxygen

Should exceed 75% as an indicator of biological activity

Other Objective C9: Biological Oxygen Demand, or BOD (localized)

No increase

OTHER GOAL D

Ensure that New Hampshire's estuarine waters and tributaries will exhibit no further degradation in any aspect of water quality:

Other Objective D: Recreation

Water quality should be suitable for fishing, swimming, and other recreational uses.

Other Objective D2: Aquatic Life

Water quality should be suitable for aquatic life. Use indicators for: aquatic insects/invertebrates, wildlife, fish, diatoms and algae, large bivalves, eelgrass, marshes

Other Objective D3: Disease-causing agents

Viruses, harmful algal blooms

Other Objective D4: Physical Characteristics

No settling of harmful deposits
No floating foam, scum, oil, etc.
No pollutants that result in the dominance of nuisance species
No objectionable odors
No increase in debris

Other Objective D5: Disposal of Untreated Sewage or Waste

Other Objective D6: Water Clarity

Turbidity not to exceed naturally occurring conditions by more than 10 NTUs
Total suspended solids (measured in mg/L)

Other Objective D7: Sediment

Reduce the amount of human-caused sediment entering the estuaries and associated tributaries.

- Institute land use practices that reduce erosion and sedimentation
- Use agricultural best management practices
- Use best management practices at construction sites

- Reduce road sand entering the estuary
- Reduce sediments entering through road culverts
- Create and enforce “no wake” zones in susceptible areas

Other Objective D8: Water Quantity (localized problem)

- Avoid over pumping of aquifers
- Reduce withdrawal of water from the Oyster and Lamprey Rivers
- Encourage water conservation

STRATEGIES FOR SPECIFIC POLLUTION SOURCES

WASTEWATER TREATMENT PLANT ROUTINE DISCHARGE (sanitary and industrial waste)

Key Strategies

VOTES	STRATEGY
9	Use secondary and tertiary wastewater treatment with the possibility of wetlands being employed in the effort.
1	Investigate alternatives to chlorine in wastewater post-treatment.

Other Strategies

VOTES	STRATEGY
4	Reduce allowable levels of industrial contaminants regulated by the NPDES permits.
3	Promote water conservation and pollution prevention.
3	Reduce WWTF discharge to the lowest practical level/volume.
1	Conduct education programs for the operators.
0	Consider combining the outflow from some/all WWTFs for discharge farther offshore.
0	Implement water quality monitoring downstream of WWTFs as a permit condition.

ILLICIT CONNECTION PROBLEMS IN URBAN AREAS

Key Strategies

VOTES	STRATEGY
—	Review the current plan to eliminate illicit connections in urban areas. Develop a plan for cities and towns to monitor storm drainage systems for illicit connections.
—	Develop a plan to map out infrastructure systems (sewer and stormwater drainage) for each coastal community.
—	Eliminate illicit connections in coastal communities.

ILLEGAL DIRECT DISCHARGES

Key Strategies

VOTES	STRATEGY
7	Conduct sanitary surveys in shellfish growing areas, and shoreline surveys in non-growing areas.
5	Establish a locally-based (conservation commissions, health officers, etc.) program for reporting illegal discharges into surface waters.
4	Provide incentives to fix/eliminate illegal direct discharges such as grey water pipes, failing septic systems, and agricultural runoff.
1	Find funding sources for key strategies.

Other Strategies

VOTES	STRATEGY
1	Enforce current laws to eliminate discharges, especially fines.

STORMWATER

Key Strategies

VOTES	STRATEGY
9	At the planning board/development stage, ensure that post-development runoff does not exceed pre-development runoff for new development.
6	Research the most effective means of treating and reducing the volume of stormwater before it discharges to surface water, especially in urban areas.
5	Develop a plan to encourage the development and use of innovative stormwater Best Management Practices technologies.
5	Develop and implement a plan to educate users of the <i>Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire</i> . Work with the Department of Environmental Services to review the current level of enforcement of erosion and sedimentation Best Management Practices use and determine if additional resources are necessary.

Other Strategies

VOTES	STRATEGY
3	Preserve wetlands in their natural state to maintain their filtering and absorption functions.
1	Develop a program that encourages the reporting of violations by citizens.
1	Preserve or replant shoreland buffers to protect water quality.
0	Enforce erosion and sedimentation controls at construction sites.
0	Enforce erosion and sedimentation controls during forestry harvesting.
0	Encourage the implementation of agricultural best management practices.
0	Establish and enforce “pooper scooper” laws.
0	Reduce the pesticides and herbicides that run off into the water courses.

WASTEWATER TREATMENT PLANT OVERLOADING IN STORM EVENTS (including pump station overflows and CSOs)

Key Strategies

VOTES	STRATEGY
9	Alleviate bacterial pollution from hydraulic overloading of wastewater treatment plants

Other Strategies

VOTES	STRATEGY
5	Investigate alternative treatment techniques.
0	Add storage into waste treatment systems (pipes, ponds, lagoons, etc.).

PERMITTED DIRECT DISCHARGES

Key Strategies

VOTES	STRATEGY
—	Restructure industrial discharge permit criteria in response to new processing technology. Re-evaluate existing permits.

Other Strategies

VOTES	STRATEGY
14	Implement incentive for toxicity and BOD loading reductions by requiring high permit fees relating to pollutant load.
8	Reduce allowable permit levels in compliance with the Clean Water Act.
1	Support stronger enforcement of NPDES discharge violations.
0	Increase the monitoring of NPDES discharges.
0	Support a non-profit organization to publish a “Good, Bad, and Ugly” list of dischargers.
0	Consider third party monitoring of NPDES discharges.

PREVENTING AND CLEANING OIL SPILLS

Key Strategies

VOTES	STRATEGY
8	Support oil spills response activities
—	Enhance oil spills clean up efforts through pre-deployment infrastructure and development of high speed current barriers.

PREVENTING AND CLEANING OIL SPILLS (continued)

Other Strategies

VOTES	STRATEGY
5	Encourage oil recycling at transfer stations.
5	Support on-going marina education and BMPs.
4	Support the Gulfwatch program.
1	Monitor/prevent intentional dumping of oil.
1	Ensure standard for ships.
0	Support the Piscataqua River Cooperative.
0	Review and improve, where necessary, the NH certified pilot and mooring attendant training.
0	Encourage storm drain stenciling.
0	Prevent highway spills.
0	Support the development of innovative remediation technologies.
—	Support outreach efforts to educate residential oil users of best management practices.

SEPTIC SYSTEMS

Key Strategies

VOTES	STRATEGY
8	Encourage the use of innovative/alternative technologies for septic systems to help improve water quality.
6	Provide information to citizens of the coastal watershed related to septic systems.

Other Strategies

VOTES	STRATEGY
6	Upgrade all systems to code when a home/business is bought/sold.
5	Institute a grant program or low interest loan to repair or replace failed systems.
4	Train health officers to identify failed systems.
1	Increase the septic system setback from surface water.
0	Monitor old, unused systems.

ATMOSPHERIC DEPOSITION

Key Strategies

VOTES	STRATEGY
8	Reduce deposition of atmospheric pollutants through eliminating loopholes in current laws, encouraging the construction of more efficient power plants, and encouraging energy conservation.

Other Strategies

VOTES	STRATEGY
10	Increase public transportation.
6	Encourage better standards/statewide testing of vehicle emissions.
4	Support advocacy efforts.
3	Support the construction of additional Park 'n Rides.
2	Reduce emissions from 2-cycle engines, particularly boat motors.
0	Reduce emissions from diesel engines.
0	Develop and promote the use of bike paths.
0	Recycle batteries (mercury).

OTHER POLLUTION SOURCES TO CONSIDER

VOTES	STRATEGY
6	Dredging
4	Landfill leachate
3	Dam breaching/removal
2	Automobiles (exhaust and leaks)
2	Boat waste/ballast water/bilge water
2	Cumulative effects
1	Naval shipyard and other superfund sites
0	Automobile repair facilities
0	Hospitals (incinerators)
0	Transformers

SHELLFISH GOALS, OBJECTIVES, AND STRATEGIES

KEY GOAL A

Triple the acreage of open shellfish beds (to 75% of all beds) and triple the number of harvestable clams and oysters in New Hampshire's estuaries.

Key Objective A1:

Maintain an approved National Shellfish Sanitation Program supported by the State.

Key Objective A2:

Increase acreage of shellfish beds in Great Bay, Little Bay, and Hampton Harbor that are open for harvest to 2500 acres by 2010.

Soft-shell Clams

Hampton-Seabrook Estuary	Now	2005
Total acres	242	242
Acres classified	110	242
Acres "approved"	60	200
Harvestable clams (bushels)	4,800	14,400
Little Harbor and Back Channel	Now	2005
Total acres	400	400
Acres classified	100	400
Acres "approved"	0	200 (seasonal)
Harvestable clams (bushels)	0	1000
Great Bay Estuary and Tributaries	Now	2005
Total acres	2,725	2,725
Acres classified	1,200	2,725
Acres "approved"	700	2,100
Harvestable clams (bushels)	2,800	8,400
Rye Harbor	Now	2005
Total acres	2	2
Acres classified	2	2
Acres "approved"	0	2 (seasonal)
Harvestable clams (bushels)	0	100
TOTAL SOFT-SHELL CLAMS (all areas)	Now	2005
Total acres	3,369	3,369
Acres classified	1,412	3,369
Acres "approved"	760	2,502
Harvestable clams (bushels)	7,600	23,900

Eastern Oysters

Great Bay Estuary and Tributaries	Now	2005
Total acres	66.7	100
Acres classified	47.9	100
Acres 'approved'	47.9	75
Bushels of harvestable oysters	50,000	150,000

Key Objective A3: Shellfish Acreage

No net decrease in acreage of oyster beds from 1997 amounts for Nannie Island, Woodman Point, Piscataqua River, Adams Point, Oyster Squamscott and Bellamy Rivers.

Nannie Island/Woodman Point	43.9 acres
Piscataqua River	12.8 acres
Adams Point	4.0 acres
Oyster River	1.8 acres
Squamscott River	1.7 acres
Bellamy River	1.5 acres

Key Objective A4: Shellfish density

- A) Oysters: No net decrease in oysters (>80 mm) / square meter from 1997 amounts at Nannie Island, Woodman Point, Piscataqua River, Adams Point, and Oyster River.

Nannie Island	50/sq meter
Woodman Point	63/sq meter
Piscataqua River	20/sq meter
Adams Point	38/sq meter
Oyster River	20/sq meter

- B) Clams: No net decrease in adult clams (>50 mm) / square meter from the 1989-1999 10-year average at Common Island, Hampton River, and Middle Ground.

Common Island	6.9/sq meter
Hampton River	4.41/sq meter
Middle Ground	14/sq meter

Key Objective A5: Shellfish Assessment

Survey each major oyster and soft-shell clam bed at a minimum of every 3 years for dimensions, density and population structure.

Key Strategies

VOTES	STRATEGY
8	Identify sources of and reduce or eliminate contaminants in the New Hampshire Estuaries watersheds (See Water Quality Goals for New Hampshire's Estuaries.)
6	<p>Create a coordinated, effective shellfish program and continue the multi-agency partnership for monitoring and classifying water quality in shellfish beds</p> <ul style="list-style-type: none"> ■ Review and consider opening additional shellfish beds under specific conditions ■ Review and consider revising conditions under which open beds are temporarily closed (e.g., amounts of rainfall)
6	Devise and implement a shellfish habitat protection plan, and, for those habitats determined to be degraded, a restoration and enhancement plan.
4	Institute land use practices in the New Hampshire estuaries watersheds that improve water quality and shellfish habitat in the estuaries (See "Land Use Goals for New Hampshire's Estuaries").
2	Enhance the amount and reliability of funding for the strategies and actions to increase the acreage of open shellfish beds.
2	<p>Devise and implement a plan to decrease mortality and increase productivity:</p> <ul style="list-style-type: none"> ■ Remove flow restrictions that negatively impact salinity and temperature ■ Institute increased settlement rate strategies ■ Increase implementation of poaching penalties (court) ■ Encourage the recreational harvesting of mature beds ■ Institute predator protection strategies ■ Explore other recreational harvest methods ■ Research the possibility of a management program based on shellfish size.
1	Continue and expand population and spatial assessments to develop date and indices. Re: the presence, abundance, and diversity of species.

Other Strategies

VOTES	STRATEGY
0	<p>Devise and implement a coordinated information/educational campaign that:</p> <ul style="list-style-type: none"> ■ Promotes the value of shellfish species and shellfish associated communities as indicators of water quality (e.g., blue mussels, razor clams, ribbed mussels, other shellfish species). ■ Provides information regarding how shellfish communities contribute to creating desired water quality (see "Water Quality Goals for New Hampshire's Estuaries"). ■ Provides information regarding public access to shellfish beds through the distribution of maps/booklets to eliminate confusion and unnecessary destruction of beds. ■ Provides outreach to show proper digging techniques.

KEY GOAL B

Assure that shellfish are fit for human consumption support a healthy marine ecosystem. (Note: Several strategies for Goal A are also applicable to Goal B.)

Key Objective B1:

Achieve water quality in Great Bay and Hampton Harbor that will meet shellfish harvest standards by 2010.

Key Strategies

VOTES	STRATEGY
4	Regularly collect and monitor water quality to identify sources and reduce or eliminate contaminants.
—	Periodically collect and monitor shellfish tissue samples as appropriate for toxins and biotoxins.

Other Strategies

VOTES	STRATEGY
0	Determine and apply standards and measures for health, growth rates, and productivity of selected shellfish species (considering natural fluctuations).
0	Consider a plan for establishing a relay process (moving contaminated shellfish to clean water in the estuary for a period) as a means of harvesting shellfish in contaminated areas.

KEY GOAL C

Provide opportunities and strategies for restoration of shellfish communities and habitat.

Key Objective C1:

Restore 20 acres of oyster habitat in Great Bay and its tidal tributaries.

KEY GOAL D

Support coordination to achieve environmentally sound shellfish aquaculture activities.

Key Objective D1:

Ensure that aquaculture practices do not adversely impact water quality or ecological health of NH's estuaries.

Key Strategies

VOTES	STRATEGY
4	Bring the shellfish program to FDA commercial compliance standards.
3	Evaluate publicly perceived institutional barriers to aquaculture and promote environmentally sound aquaculture practices.

Other Strategies

VOTES	STRATEGY
5	Restore populations of oysters in the tributaries if/where feasible.
3	Introduce ribbed mussels to restored salt marshes.
1	Consider various species (e.g., Belon oysters, surf clams, scallops, quahogs) as commercial aquaculture possibilities and conduct population and spatial assessments and/or habitat suitability assessments for these species.
1	Introduce seed to increase population densities.
0	Protect natives species and allow introduction of disease-resistant strains of native species (within the state rules for the importation of non-native species). [NOTE: May already be addressed by State/Federal regulation.]

LAND USE AND HABITAT PROTECTION GOALS, OBJECTIVES, AND STRATEGIES

KEY GOAL A

The New Hampshire coastal watershed has development patterns that ensure the protection of estuarine water quality and preserve the rural quality of the watershed.

Key Objective A1

Minimize the amount, and water quality effects, of impervious surfaces:

- 1) Keep the total impervious surface in each subwatershed below 10% of the total land area, and
- 2) Reduce runoff in all subwatersheds, especially where impervious surfaces already exceed 10% (Note: the 10% threshold is based on best available information, but may need to be researched/revised for application in New Hampshire).

Key Strategies

VOTES	STRATEGY
10	<p>Create an effective and enforceable watershed-wide intermunicipal agreement re: impervious surface lot coverage.</p> <p>a) Gather information using appropriate “buildout” analyses, to include the following steps:</p> <ul style="list-style-type: none">■ Define and delineate subwatersheds■ Sample lot coverage by land use categories to determine realistic estimates for actual impervious surface coverage.■ Project maximum land use buildout by land use category for each subwatershed, (after removing from consideration unbuildable areas [wetland, protected lands, etc.]).■ Create a database that indicates minimum required percentage of green space by zoning district■ Apply regulatory lot coverage (zoning) standards to maximum possible land use in each subwatershed to determine worst case impervious surface percentage.■ Apply current land use lot coverage estimates to maximum possible land use in each subwatershed to determine likely total impervious area percentage after buildout. <p>b) Use results of buildout analysis [from a)] to develop an inter-municipal agreement to control impervious surface lot coverage</p>
9	<p>Apply best management practices (as contained in the publication <i>Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire</i>), and utilize innovative design, to minimize the impact of non-point sources of stormwater (e.g., parking lots).</p> <ul style="list-style-type: none">■ Update and adopt best management practices■ Use building standards to improve mitigation of runoff [quantity and quality] within new development sites (e.g., drainage ponds on site)■ Reduce the quantity/improve quality of runoff in existing developed areas

Other Strategies

VOTES	STRATEGY
1	Maximize the use of existing maintained road frontage
0	Consider controlling the width of new roads where possible to reduce impervious cover

Key Objective A2

Minimize the total rate of land consumption in each of the NH coastal watershed (as measured by acres of developed land per capita).

Key Objective A3

Encourage 43 coastal watershed municipalities to actively participate in addressing sprawl.

Key Strategies

VOTES	STRATEGY
—	Work closely with the State committee focusing on limiting sprawl
13	Pursue results-oriented land protection and conservation programs for lands identified in previous prioritization efforts (e.g., Great Bay Partnership, Regional Environmental Planning Program, NHEP Critical Lands Mapping, Society for the Protection of New Hampshire Forests Coastal Initiative).
11	In zoning ordinances for commercial/industrial planning and development encourage increased density/intensity of development in already developed areas: <ul style="list-style-type: none"> ■ Create an effective transfer development rights (TDR) system in the estuarine watersheds that will help facilitate more concentration of growth in urban areas and land protection in rural areas. ■ Encourage the use of existing sites and buildings wherever possible rather than creating new ones ■ Remove barriers and provide other incentives to increase density of development
9	Protect current use law
6	In zoning ordinances for residential planning and development: <ul style="list-style-type: none"> ■ Use cluster development wherever appropriate and possible ■ Reduce or eliminate requirements and incentives for low density development
6	Focus new development in areas where infrastructure (water, sewer, and transportation) already exists while preserving urban greenspace and overall “livability.”
1	Concentrate new infrastructure development in targeted growth zones <ul style="list-style-type: none"> ■ Designate areas for growth
—	Encourage towns to return 100% of current use change tax to conservation commissions
—	Conduct a study of historic population growth vs. growth of impervious surfaces

Other Strategies

VOTES	STRATEGY
3	Develop tools for growth control based on scientific analysis
3	Promote the concept that preserving/acquiring open space has a positive impact on economic development.
2	Promote village development in rural areas that are experiencing growth
1	Develop population projections for each coastal New Hampshire watershed
0	Maximize the use of existing maintained road frontage
0	Develop a measurement or indicator of sprawl (such as calculating the current acres of developed land per capita on a town by town basis, if feasible)
0	Consider the impact of rail corridor development/redevelopment on land consumption in the watersheds

KEY GOAL B

Maximize the acreage and health of tidal wetlands in the New Hampshire coastal watershed.

Key Objective B1

Allow no loss or degradation of 6200 acres of tidal wetlands in the NH coastal watershed and restore 300 acres of tidal wetlands degraded by tidal restrictions by 2010.

Key Strategies

VOTES	STRATEGY
12	<p>Complete rule-making for and begin implementation of the New Hampshire wetlands mitigation policy entitled "A Recommended New Hampshire Wetland Mitigation Policy for NH DES by the Audubon Society of NH and the Steering Committee on Wetlands Mitigation."</p> <ul style="list-style-type: none"> ■ Any impairment to tidal wetlands functions should be mitigated. ■ Consider including the acquisition of buffers as mitigation. ■ Cumulative and secondary impacts should be considered in determining the need for mitigation. ■ Required mitigation projects should be monitored for completion.
11	Strengthen and consistently enforce the State tidal buffer zone.
10	Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands.
8	Delineate and evaluate all tidal wetlands using the Coastal Wetlands Method.

Other Strategies

VOTES	STRATEGY
11	Protect, using all appropriate conservation techniques, tidal wetlands and buffer areas (e.g., conservation easements).
1	Assist planning boards and conservation commissions in exchanging information and developing inter-municipal agreements regarding shared tidal wetlands.

KEY GOAL C

Protect freshwater and tidal shorelands to ensure estuarine water quality.

Objective C1

Allow no new impervious surfaces or major disturbances of existing vegetation (except for water-dependent uses) in NH coastal watershed. In addition to state Shoreland Protection Act regulations, encourage additional reductions of shoreland impacts by 2010.

Non-urban, freshwater areas: establish a buffer of 100 feet from surface waters, or the width of the 100 yr. floodplain, whichever is more restrictive.

Note: 1) The state Comprehensive Shoreland Protection Act calls for a 150 foot buffer, but allows some cutting of vegetation. This Objective calls for 100 foot water quality buffer with no cutting of vegetation.

2) To preserve wildlife habitat, wider buffers are desirable.

Urban, freshwater areas: establish a buffer of sufficient width to result in no negative water quality impacts. Buffer zones of natural vegetation are recommended; engineered solutions that produce equivalent water-quality results are also acceptable.

Non-urban, tidal areas: establish a buffer of 300 feet from tidal waters at high tide or within the 100 year floodplain, whichever is more restrictive.

Urban, tidal areas: establish a buffer of 100 feet from tidal waters at high tide (or an engineered solution that produces equivalent water quality results).

Note: The state Comprehensive Shoreland Protection Act calls for a 150 foot buffer, but allows some cutting of vegetation. This Objective calls for 100 foot water quality buffer with no cutting of vegetation.

Key Strategies

VOTES	STRATEGY
17	Encourage and assist each community to develop and adopt zoning regulations to create undisturbed shoreland buffers, including buffers for smaller order streams (May want to use Office of State Planning model ordinance and/or Office of State Planning's buffers guide entitled <i>Buffers for Wetlands and Surface Waters: A Guidebook for NH Communities</i>).

12	Establish and maintain natural buffers rather than engineered solutions to achieve desired water quality.
8	Investigate tax incentives to encourage buffers.
6	Strengthen the Comprehensive Shoreland Protection Act (RSA 483-B).
6	Provide a framework that helps each community define and delineate urban and non-urban areas.
6	Protect, using all appropriate conservation and land protection techniques, shorelands and buffers.
3	Improve and facilitate the code enforcement process by: <ul style="list-style-type: none"> ■ Provide funding for additional training and reporting for coastal issues ■ Make the code enforcement process simpler ■ Promoting consistent enforcement by code enforcement officers
—	Provide information about the benefits of using natural buffers rather than engineered solutions to achieve desired water quality.
—	In urban areas, pursue engineered solutions that produce water quality results equivalent to vegetated buffers.

Other Strategies

VOTES	STRATEGY
5	Issue a moratorium on new impervious surfaces adjacent to surface waters.

Key Objective C2

Allow no new establishment or expansion of existing contamination sources (such as salt storage, junk yards, solid waste, hazardous waste, etc.) within the shoreland protection area as tracked by the Department of Environmental Services.

Key Strategies

VOTES	STRATEGY
—	Enforce the 250-foot setback
—	Educate and inform code enforcement officers
—	Provide incentives for the relocation of grandfathered uses
—	Encourage and assist in the development of land use codes to protect water quality

KEY GOAL D

Protect estuarine water quality by ensuring that groundwater impacts are minimized.

Key Objective D1

Determine the extent of groundwater resources and their contaminant load to Great Bay and Hampton Harbor by 2005.

Key Objective D2

Reduce and eliminate groundwater contaminants based on outcome of Objective 1 by 2010.

Key Strategies

VOTES	STRATEGY
—	Locate and quantify groundwater inflow to the estuaries
—	Locate and reduce or eliminate groundwater contaminants

KEY GOAL E

Allow no net loss of freshwater wetlands functions in the NH coastal watershed.

Key Objective E1

Determine indicators for freshwater wetland functions.

Key Objective E2

Establish state and municipal regulatory framework necessary to prevent introduction of untreated stormwater into tidal and freshwater wetlands by 2010.

Key Objective E3

Increase use of buffers around wetlands in NH coastal watershed

Key Strategies

VOTES	STRATEGY
15	<p>Complete rule-making for and begin implementation of the New Hampshire wetlands mitigation policy entitled <i>A Recommended New Hampshire Wetland Mitigation Policy for NH DES by the Audubon Society of NH and the Steering Committee on Wetlands Mitigation</i>:</p> <ul style="list-style-type: none">■ Any impairment to freshwater wetlands functions should be mitigated.■ Consider including the acquisition of buffers as mitigation.■ Cumulative and secondary impacts should be considered in determining the need for mitigation.■ Required mitigation projects should be monitored for completion.
15	<p>Encourage all communities to designate Prime Wetlands in accordance with RSA 482-A:15 and create 100 foot buffers around them, or encourage the creation and enforcement of municipal policies that achieve the same goal of protecting prime wetlands.</p> <ul style="list-style-type: none">■ Encourage and assist all communities in evaluating and categorizing their freshwater wetlands.
8	<p>Encourage and assist all communities to adopt buffer requirements for all freshwater wetlands commensurate with the functions that they are trying to protect.</p>
6	<p>Protect, using all appropriate land conservation techniques, freshwater wetlands and buffers.</p>

Other Strategies

VOTES	STRATEGY
1	Provide educational materials and training to code enforcement officers.
0	Encourage towns to make use of the Rockingham County Conservation District's inexpensive wetlands delineations for building lots, and encourage Strafford County to develop a similar program.

KEY GOAL F

Maintain adequate habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

Key Objective F1

Determine existing acres of permanently protected land in the NH coastal watershed in the following categories: tidal shoreland, large contiguous forest blocks, wetlands with high habitat values, freshwater shorelands, rare and exemplary natural communities, by 2005.

Key Objective F2

Increase acreage of protected land containing significant habitats in the NH coastal watershed, through fee acquisition or conservation easements by 2010.

Key Strategies

VOTES	STRATEGY
13	Support implementation of state and federal land protection programs (e.g., Land and Community Heritage Program, US F&W's Teaming With Wildlife Program, Land and Water Conservation Fund).
8	Support efforts of Great Bay Resource Protection Partnership.
7	Implement protection of priority lands identified in TNC conservation plan for the Great Bay region and the Great Bay Resource Partnership Habitat Protection Plan.
6	Encourage towns to return 100% of current use change tax to conservation commissions for the purposes of protection, acquisition, easements, restoration.
6	Provide incentives for land protection (through easement, sale, or donation) by private landowners.
4	Support land conservation efforts in shoreland areas.
4	Overall Land Management Group/Plan
3	Provide technical assistance to regional land trusts and municipal conservation commissions.
2	Support towns, etc., in creating conservation trusts for designated land (ie, make sure land is used for purpose designated).
1	Identify priority wetlands for protection.
1	Encourage towns to use timber tax revenues to purchase town forest land.

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| 1 | Citizen Involvement |
| — | Establish guidelines for the management of biodiversity on conservation lands. |
| — | Implement biodiversity management guidelines on two conservation tracts per year. |

Key Objective F3

Support completion of state biomonitoring standards and increase the miles of rivers and streams meeting those standards by 2010.

Key Strategies

VOTES	STRATEGY
11	Use results of biomonitoring and water quality monitoring to prioritize watershed areas for protection and remediation.
4	Develop and encourage use of biomonitoring standards and water quality monitoring to evaluate water quality.
8	Provide a plan to towns for dealing with cumulative impacts.
7	Setbacks/buffers
6	Encourage municipalities to consider cumulative impacts on water quality when making land use decisions within local watersheds.
4	Education re: biomonitoring
1	Ensure pesticide use does not damage habitat (state law).

Key Objective F4

Increase use of buffers around wildlife areas and maintaining contiguous habitat blocks in the NH coastal watershed by 2010.

Key Strategies

VOTES	STRATEGY
18	Encourage municipalities to incorporate wildlife habitat protection into local master plans.
14	Encourage zoning that maintains contiguous habitat blocks.
13	Encourage increased extent of buffers around important wildlife areas.
8	Provide assistance to regional planning commissions and municipalities in identification and analysis of important habitats.
6	Encourage and assist all communities to adopt buffer requirements for all freshwater wetlands and vernal pools commensurate with the functions that they are trying to protect.
6	Establish greenways (eg, Britain); fed & state laws.
3	Prevent urban sprawl by having comm/industrial zoning ordinances encourage increased density/intensity and mixed use of development in already developed areas.

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| 3 | Prevent urban sprawl by concentrating new infrastructure development in targeted growth zones. |
| 3 | Encourage and assist each community to develop and adopt zoning regulations to create undisturbed shoreland buffers, including buffers for smaller order streams. |
| 2 | Prevent urban sprawl by having residential zoning ordinances use cluster development wherever appropriate and possible, and reduce or eliminate requirements and incentives for low density development. |
| 2 | Prevent urban sprawl by focusing new development in areas where infrastructure (water, sewer, and transportation) already exists while preserving urban greenspace and overall "livability." |
| 2 | Encourage all communities to evaluate and designate Prime Wetlands in accordance with RSA 482-A:15 and create 100 foot buffers around them, or encourage the creation and enforcement of municipal policies that achieve the same goal of protecting prime wetlands. |
| 2 | Investigate tax incentives to encourage buffers. |

Other Objective F5

Through voluntary measures, increase acreage of privately owned lands managed to benefit wildlife and natural communities.

Key Strategies

VOTES	STRATEGY
14	Maintain Current Use Program
6	Encourage conservation easements

Other Strategies

VOTES	STRATEGY
11	Provide private landowners with technical assistance and training on ways to benefit native wildlife and natural communities through land management activities. Include removal of invasive species.
6	Provide incentives for landowners to benefit native wildlife and natural communities through land management activities (e.g., tax incentives).
3	Apply moneys from the "Current Use" program penalty tax for natural resource management.
2	Ideas for smaller tracts, including cooperative efforts.
1	Involve young people.

OTHER GOAL G

Protect current and future water supply aquifers

OTHER GOAL H

Protect the aesthetic values of the estuaries by preserving the important views from both land and water.



HABITAT RESTORATION GOALS, OBJECTIVES, AND STRATEGIES

KEY GOAL A

Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

Key Objective A1

Increase the acreage of restored estuarine habitats by 2010.

Salt marsh: Restore 300 acres of salt marsh with tidal restrictions.

Eelgrass: Restore 50 acres of eelgrass in Portsmouth Harbor, Little Bay, and the Piscataqua, Bellamy and Oyster rivers.

Shellfish habitat: Restore 20 acres of oyster habitat in Great Bay and the tidal tributaries.

Key Strategies

VOTES	STRATEGY
13	Identify, via the Coastal Wetlands Method and observation, and restore additional restorable tidal wetlands (including tidal freshwater wetlands).
9	Continue to restore the restorable tidal wetlands listed in the Natural Resource Conservation Service's "Evaluation of Restorable Wetlands" (including tidal freshwater wetlands).
3	Identify other habitat areas that are important to restore (eg., upland, etc.).
7	Encourage state and federal agencies to provide technical and financial assistance for salt marsh restoration.
7	Encourage adoption in state law of a state mitigation policy that places high priority on restoration projects.
7	Pursue salt marsh restoration funding from the Department of Transportation (via regional transportation authorities), the Natural Resources Conservation Service, and other sources
3	Identify and implement opportunities for eelgrass restoration.
3	Improve anadromous fish access
2	Encourage state and federal agencies to provide technical and financial assistance for eelgrass restoration.
0	Provide information to and develop long-term agreements with the New Hampshire Department of Transportation and other State agencies re: available salt marsh mitigation projects.

Other Objective A2

Restore all restorable tidal wetlands in New Hampshire.

Key Strategies

VOTES	STRATEGY
17	Continue to restore the restorable tidal wetlands listed in the <i>Natural Resource Conservation Service's Evaluation of Restorable Wetlands</i> (including tidal freshwater wetlands).
12	Provide information to and develop long-term agreements with the New Hampshire Department of Transportation and other State agencies re: available mitigation projects.
3	Identify, via the Coastal Wetlands Method and observation, and restore additional restorable tidal wetlands (including tidal freshwater wetlands).
3	Pursue restoration funding from the Department of Transportation (via regional transportation authorities), the Natural Resources Conservation Service, and other sources.

Other Strategies

VOTES	STRATEGY
0	Use offsite and alternative mitigation where appropriate.

OUTREACH GOALS, OBJECTIVES, AND STRATEGIES

GOAL A

Communities, government agencies, organizations, and individuals are aware of the importance of, and participate actively in responsible use of, New Hampshire's estuaries.

Strategies

Focus on specific groups and constituencies (more than the public at large)

Focus on issues and spurring action more than general awareness

Take a positive solution-based approach

Emphasize success stories and hope

Make strategies friendly (e.g., shellfish demonstration projects)

Coordinate with other organizations to create widespread awareness of a variety of "key messages" related to New Hampshire's estuaries:

The overall need for environmental quality

- The estuaries as important resources
- Public ownership of and responsibility for the estuaries
- The current condition of the estuaries
- The necessity for a watershed approach to the estuaries
- Historical, artistic, and other connections to the estuaries
- The priority issues: shellfish, water quality, land use and habitat, and outreach as related goals contained in the New Hampshire Estuaries Project action plans

GOAL B

Communities, government agencies, organizations, and individuals participate actively in achieving shellfish-related goals for New Hampshire's estuaries.

Strategies

Work with the following constituencies to achieve shellfish-related goals:

- Recreational shellfishers
- State agencies
- Communities in which shellfish are located
 - Selectmen and councilors
 - Planning Boards
 - Conservation Commissions
- Volunteers
- Educators
- Researchers/scientists
- Shoreline property owners

Provide additional educational materials with shellfishing licenses.

GOAL C

Communities, government agencies, organizations, and individuals participate actively in achieving water quality-related goals for New Hampshire's estuaries.

Strategies and Target Audiences for Addressing Specific Contamination Sources

Sources of Bacteria and Other Disease-causing Agents

**Storm water/wastewater treatment plants overloading in storm events;
combined sewer overflows, pump station overflows**

- Children and youth (Educational activities for awareness)
- Conservation Commissions (Direct contact, Assn. of Conservation Commissions newsletter)
- Educators (Seminars, Workshops, Training, Community action)
- Elected officials (Direct contacts by NHEP Management Committee members; through shellfishers; through property-owners)
- Environmental groups (Direct contact, Newsletters)
- Planning Boards (Attend their meetings; Through Office of State Planning; Through Regional Planning Commission meetings)
- Public Works departments
- Shellfishers (Through license application process; Posters at shellfishing areas; Through "Clamline" 800 number; Through "Borderline Shellfish")
- Shoreline property owners (Via mail using NHEP data base; Newsletters; Through river associations; Newspaper)
- State agencies (Direct contacts by NHEP Management Committee members; Internet)
- Recreational users (Political support; Volunteer activities)
- University of New Hampshire (Have more organizations approach UNH re: point and non-point hazardous waste)
- Waste water treatment plant operators [seven plants] (Direct contact; through professional associations; through NH Department of Environmental Services)

Animal Issues

- Livestock [cattle, horses, sheep, etc.]: One-on-one discussions with owners; Work through animal-control officers; NH Department of Agriculture, Markets, and Food; UNH Cooperative Extension; 4-H Clubs; Conservation Districts; Seminars; Literature; Conservation Commissions; NH Coalition for Sustaining Agriculture; Regulation (use sanitary survey data);
- Dogs: "Pooper-scooper" laws; Provide information via license process; Provide information via dog training classes; Animal control officers
- Pigeons/geese/ducks/ other birds: Get information to individuals who feed them inappropriately, e.g., via signage; NH Fish and Game; US Fish and Wildlife Service; Local communities
- Wildlife: NH Fish and Game; US Fish and Wildlife; Local communities; Animal-control officers
- Rats

Agriculture

Through Conservation Districts, NH Department of Agriculture, Markets, and Food, and UNH Cooperative Extension (encourage the use of "best management practices"); One-on-one discussions with farmers; Cooperative Extension; 4-H; Conservation Districts; Seminars; Literature; Conservation Commissions; NH Coalition for Sustaining Agriculture; Regulation (use sanitary survey data)

Illicit Connections in Urban Areas

- Local officials
- Public works departments
- Department of Environmental Services
- Installers/contractors via their licensing process

Septic Systems

- Property-Owners (Offer state support, e.g., SRLF)
- Commercial and business (Use database, include renters and lessees)
- Conservation Commissions (Direct contact; Assn of Conservation Commissions newsletter)
- Planning Boards (Attend their meetings; through Office of State Planning; Regional planning commission meetings)
- Local health officers
- State agencies (Direct contacts by NHEP Management Committee members; cooperate with their ongoing education programs; encourage enforcement through NH Department of Environmental Services)
- Elected officials (Direct contacts by NHEP Management Committee members; through shellfishers, property-owners, riparian property owners)
- Environmental groups (Direct contact, newsletters)
- Recreational users
- Zoning Boards of Adjustment
- Granite State Designers and Installers
- UNH Cooperative Extension/NH Department of Environmental Services (Use their materials for educational programs)
- Direct discharges (through local health officers, NPDES, state agencies, environmental/conservation groups, e.g., shoreline surveys)

Boat Waste

- Recreational users
- New Hampshire boaters (Through Propeller Club, Power Squadron, Marine Trades Association)
- Seven marinas/yacht clubs
- Charter boat operators
- Fishing boat operators
- Tourists (Through boat shows and boating magazines)
- Coast Guard
- Harbor Masters
- Port Authority
- State agencies (Direct contacts by NHEP Management Committee members; NH Department of Safety, NH Fish and Game)
- EPA (Clean Vessel Act)

Sources of Metals, PCBs, and PAHs

Stormwater, WWTF Routine Discharges, Pump Station Overflows, Combined Sewer Overflows

See outreach strategies above.

Atmospheric Deposition

- Department of Environmental Services Air Quality Division (Do more education; newsletter)
- Clean Water Action (doing air quality work)
- New Hampshire Lung Association

- Department of Transportation (Transportation study; Buses, trains)
- Fishing groups (Information at fishing sites; Mercury advisory)
- River associations
- Information via various licensing processes
- Media (Need tie-in to sources)

Landfill Leachate

- NH Department of Environmental Services
- Communities

Hospitals (mercury and dioxin)

- Hospital associations
- State agencies (permit process)

Automobiles and Automobile Repair Facilities

- EPA (program in the Air Division)

Metals in Existing Sediments

- Avoid resuspension due to human activity (e.g, dredging)
- Watch for resuspension due to change in river course, etc.
(removal not practical)

Industrial contaminants released to sewage system

- Navy Yard (lead)
- EPA (currently working with Navy)

Boat yards/marinas (copper based paints)

- Great Bay Marine
- Other rail outhauls
- EPA voluntary program

Sources of Nutrients

Stormwater runoff, WWTF Overflows, Pump Station Overflows

WWTF Routine Discharges

Solution: tertiary treatment with citizen support and EPA funding

Illicit connections

Direct discharges

Septic systems

Fertilizers

Golf courses

ChemLawn, Bio-Spray, etc.

Use existing outreach outlets re: non-point pollution

Shoreland homeowners

Agriculture

Boat waste

Atmospheric deposition

Landfill leachate

GOAL D

Communities, government agencies, organizations, and individuals participate actively in achieving land use related goals for New Hampshire's estuaries.

Strategies

Work with the following constituencies to achieve land use goals

- Elected officials
- Planning boards
- Zoning Boards
- Conservation Commissions
- Department of Transportation
- Local highway departments
- Regional planning commissions
- Volunteers

Provide better specific information to towns

re: how development will affect water quality

- Impervious surfaces
- Siting criteria
- Use data from "Critical Lands Project" to provide specific town data

Outreach Strategies and Actions for Targeted Constituencies

Children and Youth

Desired actions/attitudes:

Be environmentally active
Appreciation for resource
Involved as volunteers

Strategies to create desired actions/attitudes:

Field trips
Newsletter for all watershed schools
Internet

Commercial and business Interests

(utility companies, fishing industry, shipping industry, tourism industry, developers)

Desired actions/attitudes:

Input to planning process
Understand and cooperate in *Management Plan*
Be environmentally active
Appreciation for resource
Report pollution sources
Light impact on resources (Sustainable practices)
Involved as volunteers
Voluntary careful shoreline development
Stewardship ("backyard" and political level)
Estuaries' connection to economic viability
Make their public outreach vehicles available

Strategies to create desired actions/attitudes:

Direct contact by Management Committee members
Work with local Chambers of Commerce to reach smaller businesses
Information/presentations at events, fairs, etc.
Targeted presentations
Education programs for developers

Conservation Commissions

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Look at current rules for appropriateness
- Create regulation where necessary
- Promote enforcement of appropriate rules
- land use planning and estuarine impact
- Identification of local shellfish/living resources
- Estuarine access
- Give presentations on behalf of the NHEP

Strategies to create desired actions/attitudes:

- Provide support
- Provide education
- Direct contact by Management Committee members

Educators

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Understanding of watershed approach, connecting upland to estuaries
- Understanding of non-point pollution
- Land use issues and their relationship to water quality degradation

Strategies to create desired actions/attitudes:

- Provide curriculum materials
- Provide opportunities for estuarine education through the Coastal Education Initiative (NHCP)
- Promote the estuaries as a laboratory for a variety of social and science topics
- Field trips

Elected Officials

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Provide funding
- Look at current rules for appropriateness
- Create regulation where necessary
- Promote enforcement of appropriate rules
- Land use planning and estuarine impact
- Identification of local shellfish/living resources
- Estuarine access
- Economic development
- Give presentations on behalf of the NHEP

Strategies to create desired actions/attitudes:

- Educate elected officials and candidates
- Direct contact by Management Committee members
- Provide base-program analysis results and implications
- Provide NHEP/GIS land use planning tools
- Provide technical assistance expertise and funding
- Provide "State of the Estuaries" report
- Invite to all NHEP-sponsored events, conferences, and workshops
- Letters to newspapers
- Field trips

Environmental Groups

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Non-point pollution impacts
- Access issues
- Land use impacts on water quality
- Creation of information/resource networks
- Partnership re: implementation of management initiatives
- Volunteers for NHEP activities (e.g., data collection, appearances at public events, materials distribution, event coordination)
- Invite to NHEP-sponsored activities

Strategies to create desired actions/attitudes:

- Technical assistance
- Presentations to the assembled membership
- Newsletters

Planning Boards

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Look at current rules for appropriateness
- Create regulation where necessary
- Promote enforcement of appropriate rules
- Land use planning and estuarine impact
- Identification of local shellfish/living resources
- Estuarine access
- Economic development
- Give presentations on behalf of the NHEP

Strategies to create desired actions/attitudes:

- Direct contact by Management Committee members
- Field trips

Public at Large

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Broad based name recognition for the NHEP
- Report pollution sources
- Be environmentally active
- Appreciation for resource
- Talk with neighbors
- Involved as volunteers
- Individual responsibility for water quality
- Watershed approach: connecting upland to estuaries
- Non-point pollution
- Understand shellfish as an indicator or overall estuarine health

Strategies to create desired actions/attitudes:

- Use television, radio, and print media
- Letters to newspapers
- Field trips
- Issues oriented approach

Recreational Estuarine Resource Users

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Report pollution sources
- Speak up to businesses that cause contamination
- Be environmentally active
- Appreciation for resource
- Light impact on resources
- Involved as volunteers
- Stewardship (backyard and political level)

Strategies to create desired actions/attitudes:

- Provide training in how to approach polluters, etc.
- Provide information re: the impact of pollution on their activities
- Field trips
- Letters to newspapers
- Provide information and issue-specific signs at site of the recreational activity
- Information in newsletters
- Invitations to NHEP-sponsored activities

Boaters

Desired actions/attitudes:

- Smaller motors
- Boat waste

Strategies to create desired actions/attitudes:

- Information at boat ramps, marinas, yacht clubs
- Information at their association or yacht club meetings
- Include information with registration materials

Finfishers

Desired actions/attitudes:

- Catch and release
- Smaller motors

Strategies to create desired actions/attitudes:

- Information at boat ramps, popular shoreline fishing locations, tackle shops
- Provide information through local angler groups

Shellfishers

Desired actions/attitudes:

- Sustainable shellfish catch
- Concern re: closures of beds/advocacy re: opening them

Strategies to create desired actions/attitudes:

- Information at boat ramps, parking locations
- Include information with registration materials

Regional Media

Desired actions/attitudes:

- Input to planning process
- Understand and cooperate in *Management Plan*
- Appreciation for resource
- Report pollution sources
- Publicize NHEP issues, actions, etc.
- Consulting help/advice re: how to get messages out

Strategies to create desired actions/attitudes:

- Provide appealing, newsworthy material capable of engaging the media
- Provide exciting material capable of engaging the public to the media
- Field trips
- Present solutions to water quality issues
- Present shellfish as an indicator of overall estuarine health
- Promote opportunities for public involvement
- Invite to NHEP sponsored activities
- Consulting help/advice re: how to get messages out

Shoreline Property Owners**Desired actions/attitudes:**

- Input to planning process
- Voluntary careful shoreline development; retain shoreline vegetation
- Create easements
- Report pollution sources; speak up to businesses that cause contamination
- Be environmentally active
- Appreciation for resource
- Talk with neighbors
- Stewardship ("backyard" level and political level) and volunteer involvement
- Non-point pollution impacts
- Estuarine access issues
- Land use impacts on water quality
- Septic system maintenance

Strategies to create desired actions/attitudes:

- Provide information re: the impact of environmental quality on property values
- Provide training in how to approach polluters, etc.
- Field trips
- Direct mail and media insertions
- Targeted public presentations
- Invite to all NHEP sponsored events, conferences, and workshops.

State Agencies**Desired actions/attitudes:**

- Input to planning process
- Understand and cooperate in *Management Plan*
- Provide funding
- Look at current rules for appropriateness; create regulation where necessary
- Promote enforcement of appropriate rules
- Land use planning and estuarine impact studies
- Identification of shellfish/living resources
- Estuarine access
- Economic development
- Presentations on behalf of the NHEP

Strategies to create desired actions/attitudes:

- Direct contact by Management Committee members

Tourists**Desired actions/attitudes:**

- Appreciation for resource
- Light impact on resources
- Involved as volunteers

Strategies to create desired actions/attitudes:

- Guided walks, Field trips
- Signs, Brochures



The National Estuary Program (NEP) was established by Section 320 of the Clean Water Act. Purpose 7 under Section 320 directs all estuary projects to review federal assistance programs and federal development projects for consistency with the goals of their Comprehensive Conservation and Management Plan (CCMP). The *New Hampshire Estuaries Project Management Plan* is the NHEP's CCMP. The consistency review is an important tool to help states ensure that federal actions do not interfere with the objectives of the estuary project. This appendix summarizes the consistency review conducted for the NHEP, and proposes a process for conducting future consistency reviews.

Several similar review procedures already exist in the State of New Hampshire. Under Executive Order 12372 (issued by the Reagan Administration in 1982), state and local governments are to develop a coordination procedure to review federal programs before assistance decisions are made. Through a formal, centralized process, this process is designed to improve the level of oversight and review of federal actions by state and local governments. In addition, consistency review procedures are contained in the Coastal Zone Management Act and the non-point source provisions of the Clean Water Act. These programs provide authority for states to comment on federal actions that are inconsistent with state or local goals. Federal agencies must then work to resolve the issues or, in some cases, explain why the action should continue over the state or local objection.

Individual NEPs are directed to examine federal actions covered under Executive Order 12372 for consistency with the CCMP. The review should also include all programs listed in the most recent Catalog of Federal Domestic Assistance, regardless of whether or not they are included in the state's E.O. 12372 program. Lastly, other non-assistance federal actions (for example, permitting programs) may be included in the review insofar as they are addressed informally.

The Federal Consistency Review for the planning phase of the NHEP involved three parts: an inventory of programs and activities that could potentially affect the goals of the CCMP; an assessment of the inventory's programs and activities regarding their consistency with the provisions of the *NHEP Management Plan*; and development of a procedure for identifying and resolving future inconsistencies. A summary of these three elements is presented below.

BACKGROUND: NHEP GOALS AND OBJECTIVES

In its 1996 Management Conference agreement with EPA, the New Hampshire Estuaries Project (NHEP) established general goals focused on identifying and resolving non-point sources of pollution, restoring and protecting shellfish and other estuarine habitats, improving land-use planning and shoreland protection, increasing water quality monitoring, and expanding outreach and public education. Through a variety of public forums, and building on baseline ecological and policy studies, the NHEP has refined these goals and developed Action Plans for meeting those goals. These goals and objectives are listed in Appendix 3.

Inventory

The Federal Consistency Review provisions under the National Estuary Program specify that the Management Conference should:

review all Federal financial assistance programs and Federal development projects in accordance with the requirements of Executive Order 12373, as in effect on September 17, 1983, to determine whether such assistance program or project would be consistent with and further the purposes or objectives of the plan prepared under this section.

In addition to the review of E.O. 12372 actions, the Clean Water Act also stipulates that the review:

may include any programs listed in the most recent Catalog of Federal Domestic Assistance which may have an effect on the purposes and objectives of the plan prepared under this section.

The inventory of federal programs compiled for the NHEP Consistency Review includes the E.O. 12372 programs, as well as additional programs under the Catalog of Federal Domestic Assistance (CFDA). The few programs eligible for E.O. 12372 review but not included on New Hampshire's list were also considered. For this inventory, consideration was given to priority problems in the estuary watersheds, specific activities with a role in the priority problems identified through the Base Program Analysis, non-point source issues identified through the state's non-point source programs, and specific goals, objectives, and action plans identified through the NHEP. Both the state Coastal Zone Management Program and the state clearinghouse under E.O. 12372 monitor an extensive list of federal programs and actions, many of which have uncertain or indirect effects on the state.

Executive Order 12372

Executive Order 12372 was developed as a means of fostering intergovernmental cooperation and improving federal accountability to state and local governments. The Order encourages states to develop a coordinated review procedure that facilitates state and local review of proposed federal financial assistance and federal development programs and directs federal agencies to use this procedure to identify and address state and local concerns with the proposed actions. Federal agencies are required to either accommodate state and local concerns (by either accepting the recommendations or negotiating a solution) or explain the basis for not doing so.

The process for implementing E.O. 12372 varies from state to state but generally involves an existing state agency acting as a clearinghouse through which state, regional, and local government entities can transmit concerns about proposed

federal actions. In New Hampshire, the Office of State Planning (NH OSP) conducts the Intergovernmental Review Process. NH OSP receives abstracts of applications for federal assistance covered by the Executive Order and distributes them to appropriate state and local agencies for review and comment on their consistency with state or area goals and programs. Discrepancies and inconsistencies are generally addressed through discussions between the reviewing agency and the applicant. Comments are then consolidated by NH OSP and sent to the responsible federal agency.

NH OSP also offers to coordinate notification of other federal activities. For example, Environmental Impact Statements (EISs) are distributed through the clearinghouse. NH OSP maintains a database of federal funds received by the state, produces an annual report, and provides information on the availability and use of federal funds. In addition to the E.O. 12372 programs, NH OSP has assumed the role of reviewing the Congressional Federal Register to extract information of interest to state and local governments and other agencies concerning federal regulatory and grant programs.

For the purposes of the NHEP consistency review, the complete list of E.O. 12372 programs reviewed by New Hampshire was obtained and amended. These amendments include:

- Programs that no longer exist were deleted.
- Programs clearly unrelated to the NHEP goals and objectives were deleted.
- Programs only applicable to other geographic regions of the country (e.g., the NOAA Marine Fisheries Initiative program that applies only to states south of Virginia) were deleted.
- Programs for which the NHEP region would likely not qualify (e.g., programs for severely economically distressed regions) were deleted.
- The few additional programs covered by the Executive Order but not on the NH list were added.
- Catalog of Federal Domestic Assistance (CFDA) programs not covered by the Executive Order but related to NHEP Goals and Objectives were added.

In addition to the federal assistance activities listed in the Catalog of Federal Domestic Assistance, a variety of other federal actions have the potential to conflict with the goals and objectives of the NHEP. Direct activities of federal agencies, offshore lease activities, and federally sponsored licenses or permits may conflict. Under the NH Coastal Program's federal consistency process, federal licenses and permits constitute the majority of consistency determinations. Thus it is important to consider these other kinds of activities when conducting a consistency review.

One Time Assessment

The second step in the federal consistency review for the NHEP is an assessment of the consistency of the programs identified in the inventory. This assessment is intended to identify where inconsistencies lie in the federal assistance programs.

No inherent inconsistencies were found among the programs in the inventory. The primary focus of the goals and objectives of the NHEP concerns land use and development-related problems. Non-point source pollution, problems with septic and wastewater treatment systems, development impacts, sprawl, habitat loss and degradation, and similar issues are the key problems thus far identified. None of the programs identified in the inventory directly contributes to these problems.

Nonetheless, a wide range of programs have objectives that overlap with the action plans of the NHEP. Many programs are consistent with, or supportive of, the NHEP goals, objectives, and Action Plans. However, a number of other programs, for instance those under the Department of Housing and Urban Development, the Department of Transportation, or the Rural Development Administration of the Department of Agriculture, have the potential to conflict with the goals of the NHEP. These potential conflicts lie in the individual proposals for assistance rather than in the programs themselves. For example, rural development programs provide assistance to low and moderate income regions for assistance with public service development. Where that assistance is used to provide wastewater treatment facilities, the programs support the goals of the NHEP. Should the assistance contribute to habitat loss, expansion of impervious surfaces or sprawl, that particular action would conflict with the NHEP.

Even where potential inconsistencies with proposed uses of federal assistance exist, the benefits from the assistance may well outweigh the costs. For example, federal assistance used to provide wastewater treatment facilities might lead to increased development density in shoreland areas. But the increase in shoreland development should be balanced against the benefits of improved wastewater treatment. Therefore each proposed project needs to be reviewed in the context of a wide range of goals and objectives in order to determine consistency.

FUTURE REVIEW STRATEGY

As required by the Clean Water Act, the NHEP will need to continue to review federal activities for the life of the project. This review will identify potential conflicts and minimize inconsistencies and redundancies. At minimum this review will need to focus on federal assistance programs as listed in the Catalog of Federal Domestic Assistance. These programs include those listed for E.O. 12372 review, as well as specific other CFDA programs identified in this report. In order to comply with this requirement, the Management Conference must develop a strategy for this continuing review. This section proposes a strategy for review based on the needs of the NHEP and the existing state infrastructure.

Criteria for Review

Criteria for review of federal assistance programs and associated projects are contained in the goals, objectives and action plans of the NHEP. Goals and objectives were developed taking into account priority problems in the Seacoast area, non-point source pollution issues identified in the state's non-point source assessment and management plan, and problems identified in the Base Programs Analysis. The NHEP has conducted numerous public meetings for feedback on the goals and objectives, and working groups have used that feedback to clarify and expand them. Action plans based on those goals and objectives have been developed using the same process. Future review should revolve around these goals, objectives, and action plans.

Review Procedures

The consistency review under the NEP is not a regulatory program, and because other review procedures already exist in the state, the proposed NHEP Consistency Review procedure is built around these existing infrastructures. In particular, the NHEP consistency review strategy will be coordinated with the NH Coastal Program's consistency review procedure.

The NHEP and NH Coastal Program work together closely and are housed in the same state agency, the Office of State Planning. The state has made a significant commitment to maintaining its Coastal Program. As a result, coordination of both programs' consistency reviews is a logical goal. The NHEP geographic coverage extends throughout the coastal watersheds, although its primary area of focus, similar to that of the NH Coastal Program, lies within those municipalities bordering or near tidal waters. Nevertheless, the NHEP interest in outlying municipalities is focused on activities that have an impact on estuarine water quality, natural resources, etc. These same activities can be considered under the purview of the Coastal Program to the extent that they influence that program's goals and objectives.

Future review should consist of three steps. First, the NHEP should develop working relationships with agency personnel through which potential inconsistencies can be identified and rectified before applications are submitted. Second, the NHEP consistency review should be incorporated into the NH Coastal Program review procedures. Finally, any additional programs that are not covered by other procedures (for example, assistance programs not covered by E.O. 12372) should be reviewed using informal direct discussions with the sponsoring federal agency. These three steps are described below.

a. Early Coordination

The NHEP can, and likely will, accomplish much of its federal consistency objectives by continuing to work closely with various federal agencies. The first step in ensuring consistency between proposed federal activities and the goals of the NHEP, therefore, should involve early coordination before projects and proposals are initiated.

ed. The purpose of early coordination is to resolve potential conflicts with NHEP goals and objectives before the state clearinghouse review, when project changes become more difficult.

Since the Management Conference for the NHEP includes several federal agencies (EPA, the USDA Natural Resources Conservation Service and the US Fish and Wildlife Service), significant coordination should occur directly as a result of this participation. Representatives from these agencies should act as liaisons, notifying the NHEP of proposed activities and transmitting Management Conference concerns back to the agencies. Every effort should be made through these kinds of informal mechanisms to resolve potential conflicts as early as possible.

To the greatest extent possible, the NHEP should also develop ongoing relationships with other federal agencies active in the Seacoast (both now and in the future) to discuss mutual objectives and seek solutions to conflicts. Informal or formal (i.e. Memoranda of Agreement, etc.) arrangements should be used to create a notification system whereby the NHEP becomes informed of relevant programs or projects. Also, focused outreach to federal agencies regarding NHEP goals and objectives would help maximize the utility of early coordination.

To the extent that such coordination prevents conflicts before applications are submitted, the subsequent review process is simplified and the workload for the state and local reviewers is reduced. New Hampshire currently encourages agency staff to develop working relationships with local, regional and federal agencies to accomplish early coordination of intergovernmental review. Such efforts should continue with the NHEP.

This early coordination should also foster ongoing review of federal assistance projects during both the application and implementation periods. As a result, programs not covered under E.O. 12372 would be reviewed following these coordination mechanisms.

b. Coordinate with New Hampshire Coastal Program

The consistency provisions of the Coastal Zone Management Act provide the New Hampshire Coastal Program (NHCP) with potent review authority over virtually all federal actions that conflict with the enforceable policies of the state Coastal Zone Management Program (CZMP). These enforceable policies are categorized into 16 **Coastal Management Policies** of the NHCP.

PROTECTION OF COASTAL RESOURCES

POLICY 1: COASTAL RESOURCE PROTECTION

Protect and preserve and, where appropriate, restore the water and related land resources of the coastal and estuarine environments. The resources of primary concern are: coastal and estuarine waters, tidal and freshwater wetlands, beaches, sand dunes, and rocky shores;

POLICY 2: FISH AND WILDLIFE MANAGEMENT

Manage, conserve and, where appropriate, undertake measures to maintain, restore, and enhance the fish and wildlife resources of the state;

POLICY 3: OFFSHORE/ONSHORE SAND AND GRAVEL REMOVAL

Regulate the mining of sand and gravel resources in offshore and onshore locations so as to ensure protection of submerged lands, and marine and estuarine life. Ensure adherence to minimum standards for restoring natural resources impacted from onshore sand and gravel operations;

POLICY 4: OIL SPILL PREVENTION AND CLEANUP

Undertake oil spill prevention measures, safe oil handling procedures and, when necessary, expedite the cleanup of oil spillage that will contaminate public waters. Institute legal action to collect damages from liable parties in accordance with state law;

POLICY 5: RARE AND ENDANGERED SPECIES

Encourage investigations of the distribution, habitat needs, and limiting factors of rare and endangered animal species and undertake conservation programs to ensure their continued perpetuation;

POLICY 6: UNIQUE NATURAL AREAS

Identify, designate, and preserve unique and rare plant and animal species and geologic formations which constitute the natural heritage of the state. Encourage measures, including acquisition strategies, to ensure their protection;

RECREATION AND PUBLIC ACCESS

POLICY 7: RECREATION FACILITIES

Provide a wide range of outdoor recreational opportunities including public access in the Sea-coast through the maintenance and improvement of the existing public facilities and the acquisition and development of new recreational areas and public access;

MANAGING COASTAL DEVELOPMENT

POLICY 8: RURAL QUALITY OF GREAT BAY

Preserve the rural character and scenic beauty of the Great Bay Estuary by limiting public investment in infrastructure within the coastal zone in order to limit development to a mixture of low and moderate density;

POLICY 9: FLOODPLAIN PROTECTION

Reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to preserve the natural and beneficial value of floodplains, through the implementation of the National Flood Insurance Program and applicable state laws and regulations, and local building codes and zoning ordinances;

POLICY 10: AIR QUALITY PROTECTION

Maintain the air resources in the coastal area by ensuring that the ambient air pollution level, established by the New Hampshire State Implementation Plan pursuant to the Clean Air Act, as amended, is not exceeded;

POLICY 11: WATER QUALITY

Protect and preserve the chemical, physical, and biological integrity of coastal water resources, both surface and groundwater;

POLICY 12: ENERGY FACILITIES SITING

Ensure that the siting of any proposed energy facility in the coast will consider the national interest and will not unduly interfere with the orderly development of the region and will not have an unreasonable adverse impact on aesthetics, historic sites, coastal and estuarine waters, air and water quality, the natural environment and the public health and safety;

COASTAL DEPENDENT USES

POLICY 13: COASTAL DEPENDENT USES

Allow only water dependent uses and structures on State properties in Portsmouth-Little Harbor, Rye Harbor, and Hampton-Seabrook Harbor, at the State Port Authority, the State Fish Pier and State beaches (except those uses or structures which directly support the public recreation purpose). Allow only water dependent uses and structures over waters and wetlands of the State. Encourage the siting of water dependent uses adjacent to public waters;

POLICY 14: DREDGING AND DREDGE SPOIL DISPOSAL

Preserve and protect coastal and tidal waters and fish and wildlife resources from adverse effects of dredging and dredge disposal, while ensuring the availability of navigable waters to coastal-dependent uses. Encourage beach renourishment and wildlife habitat restoration as a means of dredge disposal whenever compatible;

PRESERVATION OF HISTORIC AND CULTURAL RESOURCES

POLICY 15: HISTORIC PRESERVATION

Support the preservation, management, and interpretation of historic and culturally significant structures, sites and districts along the Atlantic coast and in the Great Bay area;

MARINE AND ESTUARINE RESEARCH AND EDUCATION

POLICY 16: RESEARCH AND EDUCATION

Promote and support marine and estuarine research and education that will directly benefit coastal resource management.

Actions reviewed by the NHCP include direct federal activities (any function performed by or on behalf of a federal agency in the exercise of its statutory responsibilities, including planning, construction, land acquisition or disposal, etc.), federal financial assistance activities (such as those reviewed above), federally approved licenses and permits, and exploration, development and production activities carried out under the Outer Continental Shelf Lands Act. This authority applies regardless of where the actions occur, provided they affect the NH coastal zone.

Those engaged in the covered activities are required to provide a consistency determination that declares that the action will be carried out consistent with the state's enforceable policies. Federal agencies cannot approve proposed projects that are inconsistent with the enforceable policies of New Hampshire's coastal management program, except upon a finding by the Secretary of Commerce that the projects are consistent with the purposes of the CZMA or are necessary in the interest of national security. Similarly, no federal permit can be granted unless the state concurs with the certification and notifies the Secretary of Commerce and the Secretary of the Interior of the concurrence.

The Coastal Zone Management Act consistency review is stronger than that provided through Executive Order 12372, and applies to substantially more actions than those under the executive order. Although NHEP will not be adopted as a Special Area Management Plan under the Coastal Program, NHEP will have the ability to use NHCP power in its consistency review to the maximum extent possible. The NHCP has reviewed the NHEP goals for consistency with the NHCP's 16 enforceable policies. Based on this review, the NHCP federal consistency coordinator determined there is no need to amend the NHCP's federally-approved coastal management program. According to the consistency coordinator, "The statutes and administrative rules which comprise the Enforcement and Enhancement sections of each NHCP Policy adequately protect the NHEP Goals." In the event that NHCP amends its policies, NHEP will have the ability to comment on NHCP enforceable policies during the public hearing.

A list of NHEP Goals and the correlated NHCP Policy number is presented below:

NHEP Goal	NHCP Policy #
Water Quality Goals	11
Land Use, Development, and Habitat Protection Goals	1, 5, 6, 7, 8, 9, 11, 12, 13, 14
Shellfish Resource Goals	1, 2
Habitat Restoration Goals	1, 5, 6
Education and Outreach Goals	16

The NHCP consistency program is willing to accommodate to the greatest extent possible NHEP's consistency review procedure. When a project comes through NHCP for review, the NHCP consistency coordinator will forward the project to the NHEP Director for comment. NHEP, in itself, will not have the ability to object. However, NHCP will enforce by its own objection NHEP comments or objections that are supported by statute. Any comments NHEP may raise will likely also be raised by NHCP, due to the commonality between NHCP's enforceable policies and the NHEP goals. Coordination of the consistency review process will be streamlined since both NHCP and NHEP are housed in the Office of State Planning, and the Director of the Office of State Planning is a member of the NHEP Management Committee and will continue to be a member of the Governing Board.

Because NHCP policies and NHEP goals are so similar and conflict is extremely unlikely to occur, the NHCP consistency coordinator does not recommend developing a strategy to minimize inconsistencies between the two programs. The only issue to address is one of degree. In each consistency determination NHCP must weigh the policy in question against the rest of its 16 enforceable policies. For example, a consistency determination regarding shellfish resource protection will be weighed against the policy for coastal dependent uses. This balancing may result in a lesser degree of promotion of a NHEP Goal than the NHEP would like. Utilization of the NHCP federal consistency review process is still beneficial to NHEP because even in the event of such balancing of policies, the NHCP's authority exceeds what could be accomplished under a NHEP federal review program.

c. Additional Reviews

Early coordination and review through the NHCP should address most, if not all, of consistency problems as envisioned under Purpose 7 of the National Estuary Program. Any activities and programs not covered will need to be reviewed directly with the sponsoring agency through the informal mechanisms and agreements discussed above.

Finally, the NHEP should also review Draft Environmental Impact Statements (DEISs) prepared under the National Environmental Policy Act (NEPA) for consistency, and comment accordingly. For this review, the EPA participant on the NHEP Management Conference should act as a conduit and notify the NHEP of relevant NEPA reviews. Once again, the NHCP already reviews EISs and should coordinate the review for the NHEP. Coordination mechanisms developed to assist in consistency review should also be used in EIS review.

d. Endangered Species Act

Section 7(a)(2) of the Endangered Species Act directs federal agencies, in consultation with the Fish and Wildlife Service and the National Marine Fisheries Service, to ensure that actions they authorize, fund or carry out are not likely to jeopardize listed species or their designated critical habitat. Section 7(a)(2) consultation may be required of NHEP during Management Plan implementation where federal agencies authorize, fund, or carry out an activity that may affect listed species. Each federal agency must determine if consultation is necessary on a case-by-case basis.

e. National Historic Preservation Act

NHEP will coordinate with appropriate agencies under section 106 of the National Historic Preservation Act. Federal agencies that fund, permit, license, approve, or carry out certain actions in the Management Plan may be required to consult the State Historic Preservation Office to determine if a site is listed in or is eligible for listing in the National Register of Historic Places. If a site is listed or eligible for listing, then the agency must determine if there is a potential for adverse effects to the site as a result of the proposed action.

Resolution of Disagreements

In the event of Management Conference disagreements on consistency recommendations, existing resolution mechanisms within the Management Conference should be used. When no resolution is possible, “majority” and “minority” comments should be submitted.

Time Line for Review

For those programs and activities covered under the NHCP, deadlines for reviews are already established through the authorizing legislation. For federal licenses or permits, NH OSP-NHCP has six months from receipt of the applicant’s letter and accompanying information in which to concur or object. If the NHCP fails to respond within six months, concurrence is presumed. For other direct federal activities, the state has 45 days to respond (and may request an additional 15 days if needed).

Time lines for E.O. 12372 reviews also exist under the state’s clearinghouse process, and those should be adopted by the NHEP to whatever extent the NHEP directly participates in that portion of consistency review.

Management Conference Point of Contact

The Management Conference Point of Contact should be the state’s NHEP Project Director.

GRANTS AND ACTION PLAN DEMONSTRATION PROJECTS FUNDED BY THE NHEP

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LOCAL GRANTS

Design of a Walkway to Improve Salt Marsh Education on the Odiorne Farm Portion of Odiorne State Park

(Friends of Odiorne Point State Park)

This project resulted in the planning and design of a handicapped-accessible walkway, with viewing platforms. When constructed, the walkway will provide an 'outdoor classroom' for marsh educational programs at the Seacoast Science Center.

Edmond Avenue Wetland Restoration Project

(City of Portsmouth Public Works Department)

This project involved developing a comprehensive long-term stormwater management plan for the Edmond Avenue freshwater wetland system, and implemented temporary steps to relieve wetland degradation from stormwater inputs to the wetland.

Reclamation of a Gravel Pit Located in the Fork of the Confluence of the Branch River and Jones Brook to Protect and Enhance the Riparian Buffer and Wetland

(Town of Milton Planning Board)

This project involved protection riparian buffers and wetlands along tributaries to the Salmon Falls River by correcting various shoreline erosion problems that resulted from past mining activities on the site.

Natural Resource Inventory, Evaluation, Mapping, and Outreach in Newmarket, NH

(Town of Newmarket Conservation Commission)

This project was designed to finish a wetland evaluation project in the town of Newmarket, and to develop natural resource maps to make environmental information more accessible to town officials and citizens.

Fairhill Salt Marsh Restoration Project

(Town of Rye Mosquito Control Commission)

This project restored the hydrologic and ecological functions of a degraded salt marsh.

Cains Brook and Mill Creek Watershed Study

(Town of Seabrook Conservation Commission)

This project focused on locating, mapping, and sampling stormwater drainage outlets in the Cains Brook Watershed in an effort to identify sources of bacterial and other pollution.

A Listing of Agricultural Producers in Strafford County

(Strafford County Conservation District)

This project was designed to update a database of agricultural producers in Strafford County. The digital database will be useful in targeting non-point pollution prevention programs and other forms of technical assistance.

Public Outreach Education in the Cocheco River Watershed

(Strafford Regional Planning Commission)

This project conducted various educational activities in the Cocheco River Watershed to foster the development of an informed citizenry to make decisions about the watershed's environmental quality.

State of the North Mill Pond, Portsmouth, NH

(Advocates for the North Mill Pond)

This project was designed to identify pollution sources and document the natural resources around the North Mill Pond in downtown Portsmouth.

Riverside Drive Restoration Project

(City of Dover Community Services Department)

This project was designed to correct the effects of severe stormwater erosion in a natural drainage way in close proximity to the Piscataqua River.

Odyssey School: Hampton Storm Drain Outflow Report

(Odyssey House, Inc.)

This project evaluated fecal contamination from five stormwater outflows in the Hampton-Seabrook Estuary

Implementing Effective Land Stewardship Programs

(Audubon Society of New Hampshire)

This project provided educational opportunities and technical assistance to coastal municipalities on how to develop and implement effective land stewardship and monitoring programs.

Epping's Lamprey Watershed Program

(Town of Epping)

This report documents the results of water quality monitoring of the Lamprey River in Epping, and describes the involvement of Epping school staff, students, and community members in the project.

Northwood Wetland Inventory and Prime Wetland Designation Project, Northwood, NH

(Town of Northwood)

This project documents the assessment of wetlands in the town of Northwood, NH, and describes the process that will be used to revise town wetland ordinances as a result of the findings of the wetland evaluation.

Little River Marsh Restoration and Landowner Education Project

(Town of North Hampton)

This project, part of a larger effort to restore the Little River salt marsh, involves some field work to prepare for physical restoration, as well as education on the need for marsh restoration targeted to landowners along the marsh boundary.

Spur Road Sewer Extension, Dover, NH

(City of Dover)

This project extends sewer infrastructure to homes adjacent to the Bellamy River to alleviate current, and prevent future sources of pollution from failing septic systems.

Oyster River Watershed Smart Growth Plan

(Strafford Regional Planning Commission and Oyster River Watershed Association)

This project is designed to develop a regional anti-sprawl partnership in the Oyster River watershed. The project aims to develop consensus on goals for natural resource preservation, growth management, community and watershed character, collaborative partnerships, and shared resources. Consensus on these issues will be built through surveys and watershed visioning sessions. A planning document will be developed for the watershed describing the resulting goals, general policies, and recommend actions for the partners.

ACTION PLAN DEMONSTRATION PROJECTS

Action Plan Demonstration Projects (APDPs) assist estuary projects in formulating and evaluating “action plans” for inclusion in the Management Plan. The NH Estuaries Project solicited APDP proposals in 1998 and 1999. The projects were designed to implement a strategy or activity to meet the NHEP goals of environmental quality improvement. 12 projects were funded over two years.

Installation of Agricultural BMPs at the Stuart Farm, Stratham, NH

(NH Department of Environmental Services)

This project is designed to reduce nutrient and bacterial contamination from barnyard and manure storage runoff at a dairy farm located adjacent to the Squamscott River.

Cross Beach Road Stormwater Drainage Project

(Town of Seabrook)

This project was designed to prevent salt marsh degradation by correcting stormwater drainage in the area of Cross Beach Road in Seabrook, NH

Edmond Avenue Stormwater Management/ Wetland Restoration Plan Implementation

(City of Portsmouth)

This project implements the stormwater management and wetland restoration practices recommended in a previously funded planning project.

Restoration of Clam Habitat in the Hampton-Seabrook Estuary

(UNH Sea Grant Cooperative Extension)

This project describes the restoration of clam habitat in the Hampton-Seabrook Estuary through the removal and relocation of mussels that had colonized the clam flat. The report includes documentation of clam flat condition before and after mussel removal.

Eliminating Bacteria Loads to Cocheco and Bellamy Rivers: Stormdrain/Sewer Separation, Phase I

(City of Dover).

This project is designed to identify and eliminate discharge of raw sewage to the Cocheco River. The project will result in the elimination of several previously identified sanitary sewer/storm sewer illicit connections.

Eliminating Bacteria Loads to the Lamprey River: Stormdrain/Sewer Separation

(Town of Newmarket)

This project is designed to identify and eliminate discharge of raw sewage to the Lamprey River. The project will result in the identification and elimination of sanitary sewer/storm sewer illicit connections in the downtown area of Newmarket.

Installation of Stormwater and Barnyard Best Management Practices at Jan-Mar Farm, Rochester, NH

(NH Dept. of Environmental Services)

This project will implement agricultural conservation measure to separate stormwater runoff from animal waste concentration areas, and to treat contaminated runoff. This grant will fund the first of three phases of work, stormwater separation.

Stormwater Control at the Allen School, Rochester, NH

(City of Rochester)

This project will, with the assistance of local volunteers and the Cocheco River Watershed Coalition, correct several stormwater-related problems at an urban site along the Cocheco River. The project includes the installation of low technology (pipe and swale) management practices, bank stabilization, and other measures.

Breeding Birds of the Piscassic River Focus Area

(NH Audubon/Great Bay Res. Protection Partnership)

Through this project NH Audubon and local volunteers will conduct breeding bird surveys in the Piscassic River (Exeter/Newfields/Epping) area. This data is deemed critical to receiving funding to permanently protect habitats identified as important in several habitat protection plans.

New Village Sewer Illicit Connection Elimination

(Town of Newmarket)

This project is designed to identify and eliminate sources of raw sewage discharge to the Lamprey River. Sources of discharge are suspected to be sanitary sewer/storm sewer illicit connections and/or broken sewer pipes.

Eliminating Bacteria Loads to Cocheco and Bellamy Rivers: Stormdrain/Sewer Separation, Phase II

(City of Dover).

This project is designed to identify and eliminate discharge of raw sewage to the Cocheco River. The project will result in the elimination of seven previously identified sanitary sewer illicit connections. It is estimated that four more illicit connections will be identified during the course of the work.

Charles Street Stormwater Management Project, Hampton, NH

(Hampton Conservation Commission)

This project is designed to manage stormwater flow and restore a degraded salt marsh by removing accumulated sediment, excavating shallow pools, and improving a tidal drainage ditch.

MANAGEMENT CONFERENCE MEMBERS

New Hampshire Estuaries Project Management Committee

Chair

Jeffrey Taylor New Hampshire Office of State Planning

Vice Chair

Richard Langan University of New Hampshire Jackson Estuarine Laboratory

Ron Alie	New Hampshire Fish and Game Department
Jennifer Brown	Sprague Energy Corporation
Russell Bailey	Town of Seabrook
Mike Basque	Town of Salisbury, Massachusetts
Jim Chase	NHEP Outreach Project Team, <i>Chair</i>
Ed Cournoyer	New Hampshire Fish and Game Department
Peter Dow	Town of Exeter/Rockingham Land Trust
Brian Doyle	University of New Hampshire Sea Grant
Richard Dumore	Public Service Company of New Hampshire
Taylor Eighmy	University of New Hampshire Environmental Research Group
Ward Fuert	USFWS/Rachel Carlson Refuge/ Great Bay National Wildlife Refuge
David Funk	Great Bay Stewards
Brian Giles	Strafford Regional Planning Commission
Tom Gillick	Town of Hampton
Glenn Greenwood	Rockingham Planning Commission
Sabin Guertin	New Hampshire Department Health & Human Services
Tom Howe	Society for the Protection of New Hampshire Forests
Mark Kern	US EPA Region 1
Natalie Landry	Water Quality Project Team, <i>Chair</i>
Wendy Lull	Seacoast Science Center
Sean Mckenna	Wentworth by the Sea Marina
Richard Moore	Audubon Society of New Hampshire
Chris Nash	NHEP Land Use Project Team, <i>Chair</i>
Dean Peschel	City of Dover
Chris Simmers	New Hampshire Department of Environmental Services
Brad Sterl	State of Maine
Peter Tilton Jr	Town of Hampton
Henry Veilleux	Business and Industry Association of New Hampshire
Ian Walker	Aquaculture Resource Development
Joyce Welch	New Hampshire Department Health & Human Services
Peter Wellenberger	New Hampshire Fish and Game Department
Vallana Winslow-Pratt	NHEP Shellfish Project Team, <i>Chair</i>

Water Quality Project Team

Chair

Natalie Landry	New Hampshire Department of Environmental Services
Jim Chase	Seacoast Science Center
Ted Diers	New Hampshire Coastal Program
Steve Jones	University of New Hampshire Jackson Estuarine Laboratory
Mark Kern	US EPA Region 1
Gerry Lang	USDA Natural Resources Conservation Service
Dave McDonald	US EPA Region 1
Joanne McLaughlin	New Hampshire Coastal Program
Mary Menconi	University of New Hampshire
Bambi Miller	Strafford County Conservation District
Dan Morris	Sierra Club
Chris Nash	NH Estuaries Project
Billy Palmatier	Interested Citizen
Steve Panish	Sierra Club
Dean Peschel	City of Dover
Dan Potashnick	Interested Citizen
Ann Reid	University of New Hampshire Sea Grant/Great Bay/Coast Watch
Linda Scherf	City of Dover
Fred Short	University of New Hampshire Jackson Estuarine Laboratory
Jerry Sotolongo	US EPA Region 1
Rob Swift	University of New Hampshire Mechanical Engineering Department
Jan Taylor	Great Bay National Wildlife Refuge
Vallana Winslow-Pratt	New Hampshire Department of Health and Human Services

Land Use Project Team

Chair

Chris Nash	New Hampshire Office of State Planning
Arnold Banner	US Fish and Wildlife Service /Gulf of Maine Project
Dave Burdick	University of New Hampshire Jackson Estuarine Laboratory
Steve Burns	Strafford Regional Planning Commission
Jim Chase	Seacoast Science Center
Rich Cook	Audubon Society of New Hampshire
Mary Currier	Rockingham County Conservation District
Ted Diers	New Hampshire Coastal Program
David Funk	Great Bay Stewards
Glenn Greenwood	Rockingham Planning Commission
Mark Kern	US EPA Region 1
Mimi Larsen Becker	University of New Hampshire Department Natural Resources
Cynthia Lay	New Hampshire Coastal Program
Billy Palmatier	Interested Citizen
Carl Paulsen	Interested Citizen
Fay Rubin	University of New Hampshire Complex Systems
Jeff Schloss	University of New Hampshire Cooperative Extension
Paul Schumacher	Southern Maine Regional Planning Comm
Fred Short	University of New Hampshire Jackson Estuarine Laboratory
Sharon Vaughn	Great Bay National Wildlife Refuge
Joyce Welch	New Hampshire Department Health and Human Services
Vallana Winslow-Pratt	New Hampshire Department Health and Human Services

Shellfish/Living Resources Project Team

Chair

Vallana W.-Pratt	New Hampshire Department of Health and Human Services
William Brindamour	Hampton Shuttle Service
Dave Burdick	University of New Hampshire Jackson Estuarine Laboratory
Jim Chase	Seacoast Science Center
Shanna Hallas	Great Bay National Wildlife Refuge
Steve Jones	University of New Hampshire Jackson Estuarine Laboratory
Mark Kern	US EPA Region 1
Richard Langan	University of New Hampshire Jackson Estuarine Laboratory
Clare McBane	New Hampshire Fish and Game Department
Joanne McLaughlin	New Hampshire Coastal Program
Chris Nash	New Hampshire Estuaries Project
Paul Raiche	New Hampshire Department Health and Human Services
Ann Reid	University of New Hampshire Sea Grant/Great Bay Coast Watch
Don Smart	Shellfish Harvester
Bruce Smith	New Hampshire Fish and Game Department
Peter Tilton Jr	Town of Hampton
Ian Walker	Aquaculture Resource Development

Outreach and Education Project Team

Chair

Jim Chase	Seacoast Science Center
Alice Briggs	Great Bay Coast Watch
Howard Crosby	Friends of Odiorne Point
Dick Delude	Dover Public Schools
Brian Giles	Strafford Regional Planning Commission
Ellen Goethel	Town of Hampton
Mike Gowell	Piscataqua Gundalow Project
Mark Kern	US EPA Region 1
Nancy Lambert	University of New Hampshire Cooperative Extension
Cynthia Lay	NH Coastal Program
Wendy Lull	Seacoast Science Center
Kelle Mckenzie	NH Fish and Game Department/Sandy Point Discovery Center
Sharon Meeker	University of New Hampshire Sea Grant
Chris Nash	New Hampshire Estuaries Project
Paul Nevins	Irving Oil Corp
Julia Peterson	CICEET/University of New Hampshire Sea Grant Extension
Ann Rodney	US EPA Region 1
Carol Spadora	Environmental Hazards Management Institute
Vallana Winslow-Pratt	New Hampshire Department of Health and Human Services

New Hampshire Estuaries Project Staff During Management Plan Production

Chris Nash	<i>Director</i>	
Jim Chase	<i>Public Outreach Coordinator</i>	
Natalie Landry	<i>Water Quality Specialist</i>	
Lorraine Stuart Merrill	<i>Management Plan Writer and Editor (contractor)</i>	
Patricia Miller	<i>Graphic Designer (contractor)</i>	
Mary Power	<i>Executive Secretary</i>	
Jim Varn	<i>Action Plan Facilitator (contractor)</i>	
Vallana Winslow-Pratt	<i>Environmental Specialist</i>	
Cynthia Lay	<i>Director, New Hampshire Estuaries Project</i>	May 2000 -

COMMENTS AND RESPONSES TO THE DRAFT MANAGEMENT PLAN

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The New Hampshire Estuaries Project *Draft Management Plan* was released for public review and comment on December 1, 1999. The public comment period extended 60 days until February 1, 2000. During this period the NHEP circulated 300 copies of the *Draft Plan*, and convened two public hearings to receive comment on the document.

Draft Plans were delivered to all NHEP Management Conference members, and made available at 12 locations in the region including eight public libraries, both regional planning offices, the NHEP/NHCP offices, and the Seacoast Science Center. The entire *Plan* was posted on the web at the NHEP website. Copies were mailed to each state senator representing communities in the Great Bay and coastal watersheds. Representatives from the region were notified by mail of the release of the document and copies were provided upon request. Town offices in each of the 43 communities of the NHEP study area received a copy of the *Plan*. Selectmen, planning staff and planning boards, and conservation commissions were notified by direct mail that the *Plan* was released and available at town offices. Press releases announcing the release of the *Draft Plan* and the public hearings were published by several local newspapers. Legal Notices of the public hearings were published in local newspapers three weeks prior to the hearings. Postcards announcing the release of the *Draft Plan* and the public hearings were sent to the 3,400-shoreline property owners on the NHEP shoreline property owner database.

The NHEP received a wealth of valuable comments from Management Conference members, state and federal agency representatives, environmental groups, municipal officials, and interested citizens. Comments ranged from typographical and editorial to observations on document scope, content, and structure. Appendix 7 summarizes the public comments received during and after the comment period and provides a response to those raised. All comments were evaluated and considered based on their feasibility and consistency with the goals of the Plan. The *NHEP Management Plan* Action Plans that address, support, or clarify the comments are referenced where appropriate.

Comments on Implementation

Has the Estuaries Project performed a cost/benefit analysis of the action plans?

Implementing the entire *NHEP Management Plan* will require substantial funding. Costs to fully implement just the Highest Priority actions include almost \$876,000 in one-time costs (based on one salt marsh restoration project and nineteen shellfish bed restoration projects at an estimated \$10,000 each), approximately \$557,890 in annual costs, and approximately \$77,500 in per-town costs (if extended to all 43 watershed towns, the total for this item would be \$3,332,500).

Obtaining the necessary funding will be a challenge, given the current realities of public funding at the local, state, and federal levels, but the *Plan* was developed with this challenge in mind. Project participants recognized that much environmental protection, restoration, and outreach work is already occurring in and around the estuaries, and many of the Action Plans were designed to leverage and complement, rather than duplicate, these efforts.

Cost estimates are presented for each Action Plan in Chapters 4-8. Accurately predicting costs of many of the actions listed in the *Plan* is difficult. For example, the cost of remediating a stormwater outfall or restoring a salt marsh can only be accurately estimated after a detailed study of the site. Cost estimates included in the *Plan* are intended as a general guide of the required funding. Cost estimates will be refined as the NHEP Board selects individual Action Plans for implementation each year.

Each Action Plan has been assigned a ranking of Highest Priority, High Priority, or Priority. This ranking reflects the action's impact on the environmental condition of the estuaries in relation to the current priority issues, without regard to cost of implementation. In developing each annual work plan, Action Plan implementation opportunities are considered against available funds and possible shifts in priority issues. The NHEP governing Board will perform informal cost/benefit analysis in determining the annual work plan, using their collective knowledge of the state's estuarine resources, environmental condition, and existing or evolving management framework to advance projects that will provide the most critical environmental improvements with the available funds.

Recognize the importance of monitoring changes in behavior.

In the *Management Plan's Chapter 8: Public Outreach and Education*, the NHEP acknowledges, "At some level, every environmental problem threatening New Hampshire's estuaries is related to human activities." The challenge for the NHEP is to raise awareness and promote changes in attitudes, local priorities, and planning processes. These changes are in large part behavioral and take time. Measuring behavioral change in the general population over the time scale of Action Plan implementation in this *Plan* is difficult. However, actual implementation of some Action Plans, such as those related to local land-use planning and habitat protection, will provide a subjective measure of changes in attitude. These actions require adoption of new natural resource-based planning paradigms. Water quality improvements attributed to reduced non-point source contamination will also provide an indirect indicator of changes in how people in New Hampshire's estuarine watersheds view and treat their water resources.

Need language regarding limits to accomplishing everything in the Plan.

The *NHEP Management Plan* represents an ambitious step toward protecting and preserving the character and natural resources of estuarine New Hampshire. As stated in *Chapter 10: Implementation and Finance*, "The *NHEP Management Plan* will be the basis for all NHEP implementation activities, although flexibility will be exercised to take advantage of all opportunities for improving the estuaries." The 45 Action Plans designated Highest Priority were deemed critical to achieving the goals and objectives of the *Plan*, and will be the main focus of the first four years of implementation. Still, completion of all Highest Priority Action Plans within the first four years of implementation is an unrealistic expectation. The NHEP is committed to implementing as many of these actions as time and financing allow. Costs of implementing the Highest Priority actions alone exceeds \$4.5 million. The NHEP recognizes that much of environmental protection, restoration, and outreach work is already underway in the estuarine watershed. The NHEP crafted the *Plan* to build on, leverage, and complement – rather than duplicate – these efforts. This strategy will ensure the fullest possible implementation of the *Plan*.

Produce and distribute an executive summary of the plan

An executive summary of the *Plan* has been produced and will be widely distributed to municipal officials, state legislators, environmental organizations, and other interested stakeholder groups.

How and by whom was the decision made to not include certain ideas/positions in the final draft of the Plan?

Where should input about those decisions be channeled?

The NHEP Management Committee has ultimate authority on the content of the *NHEP Management Plan*. During the revision process, NHEP staff kept the Management Committee apprised of the most substantive editorial and content-related comments. The Management Committee was generally pleased with the draft *Plan*, its content, organization and layout. They urged the NHEP staff to press on with the editorial revisions and acknowledged that the *Plan* was a planning document subject to continual re-evaluation and updates as issues and environmental conditions change. Input on decisions should be channeled to project Director.

Are the implementation funds spread too thin?

Are there too many action plans included?

The NHEP cannot hope to implement all of the Actions presented in the *Plan* using US EPA National Estuaries Program implementation funds alone. This funding exists for the short term, while the region's environmental and growth issues will persist well into the future. Federal funds from sources other than EPA will be required to fund portions of the *Plan*. The NHEP will ultimately also have to look to both state and local sources of money to accomplish even the Highest Priority actions proposed in the *Plan*. The *Plan* has been crafted to work with the many natural resource planning, protection, restoration, and education projects underway in New Hampshire's estuarine watershed. This strategy maximizes opportunity for leveraged projects, and affords strong links with communities which may be able to provide valuable in-kind contributions in implementing many Action Plans. The NHEP Board and staff are responsible for researching and securing funding from outside the National Estuaries Program to help implement as much of the *Plan* as possible. The *Plan* was written with the intention of implementing all the Highest Priority Action Plans, in full or in part, by 2003. Opportunities to implement the High Priority Action Plans will be investigated and implemented where appropriate by 2003. Priority Action Plans will be funded and implemented as opportunities arise.

Include Maine more directly and explicitly in the plan.

Under the federal funding and administrative structure of the NHEP, the project was unable to spend money directly on projects in Maine. However, the State of Maine was represented on the Management Committee by Mr. Brad Sterl, formerly of the Maine Department of Marine Resources. Paul Schumacher of the Southern Maine Regional Planning Commission was kept informed of NHEP progress and of any specific issues requiring attention in the State of Maine.

Comments on Partners and Partnerships

What is the role of the regional planning commissions in plan implementation?

The Rockingham Planning Commission and the Strafford Regional Planning Commission have been instrumental partners of the NHEP in developing the *Plan*. Both organizations have been active participants on the NHEP Management Committee, helping to shape and guide the Project from the outset. The regional planning commissions (RPCs) have been active on subcommittee working groups and the Land Use project team. Other NHEP project teams, (Outreach, Shellfish, and Water Quality) received comments and contributions from the RPCs where appropriate.

Because of their extensive involvement in developing the Plan, the RPCs are identified as responsible parties and lead implementers throughout the document. Project participants recognized that much environmental protection, restoration, and outreach work is already occurring in and around the estuaries, and many of the Action Plans were designed to leverage and complement, rather than duplicate, these efforts.

Concern about the regional planning commissions having the capacity to implement the action plans in which they have been assigned a role.

Action Plans have been developed with existing agency and organizational missions in mind. This strategy helps maximize the opportunity for leveraging funds and work plans in a way that advances the implementation of the *NHEP Management Plan*. The regional planning commissions may use federal NHEP implementation funds to carry out some Action Plans. Recognizing that their roles in implementing Action Plans could place excessive burdens on existing RPC staff resources, many Action Plan cost estimates include full-time equivalent costs to support the needed increase in staff.

Working relationships among the various partners.

Much of the strength of the NHEP is derived from the working relationships forged between the members of the NHEP Management Conference, particularly those on the Management Committee. The list of NHEP Management Conference members at the beginning of this document testifies to the diverse and influential group involved in the project. The **Responsible Parties** identified in each Action Plan recognize the likely participants and their roles in implementing actions. As funds become available for Action Plans that do not identify a coordinating entity or lead implementer, the NHEP will convene a group of interested parties. NHEP will coordinate and facilitate the group convened, to assign work tasks as appropriate and develop the work plan detail necessary to carry out an action. Some actions without an identified coordinating entity will be implemented through a Request for Proposals. A lead implementor will be designated upon selection of a successful proposal.

How will the action plans be managed and the various implementing parties coordinated?

The NHEP tried to assign a lead implementer to each Action Plan as they were developed. Each lead implementer will be responsible for managing work activities. The NHEP will be responsible for tracking overall implementation of the *Management Plan*, and the Action Plans. The NHEP will coordinate the parties involved where appropriate. Many Action Plans will be implemented, in full or in part, in the normal course of the work of many NHEP Management Conference members. The NHEP will coordinate with the various agencies, environmental organizations, and local communities to track natural resource management, planning, and educational projects that may not originate with the NHEP, but may contribute to implementation of the *Management Plan*.

Add the Conservation District as a responsible party for some actions.

Both the Strafford and Rockingham County Conservation Districts have been added as responsible parties to several additional *Action Plans*. As each *Action Plan* is implemented, the NHEP and its partners will assess whether all appropriate implementers are aware of or involved in the activity. The NHEP is always open to new partners, and recognizes that people and organizations may be added to or removed from the lists of Responsible Parties.

Need to work with the Portsmouth Naval Shipyard, perhaps through their citizens' advisory committee.

The Portsmouth Naval Shipyard received and reviewed a copy of the *Plan*. As of May 2000 no comments had been received by the NHEP from the Naval Shipyard. The Naval Shipyard was identified in the NHEP Technical Characterization Report as at least a historic source of some toxic contaminants to the estuaries. Implementation of Action Plans that address issues of toxic contamination associated with the Naval Shipyard will be coordinated with shipyard authorities.

Comments on Prioritization

Need to keep flexibility on prioritization.

The NHEP Board will develop annual implementation workplans. In so doing, the Board will consider any changes in priorities, while striving to coordinate with the efforts and momentum of its partners. Flexibility is key to taking advantage of funding opportunities, to maximizing returns by fitting tasks into the work plans of partner organizations, and to addressing projects that become good opportunities because of timing, financial, or other developments.

Consider changing the wording regarding priorities because "low" implies unimportant whereas all action plans are important.

The priorities have been changed to Highest Priority, High Priority, and Priority. All actions in the Draft *NHEP Management Plan* ranked High or High to Medium have been reclassified Highest Priority. Action Plans ranked Medium to High, Medium, or Medium to Low, have been re-designated High Priority. Action Plans ranked Low to Medium, Low, or not ranked, have been re-designated Priority.

Need to rate the un-prioritized items.

Any Action Plans presented in the Draft *NHEP Management Plan* without a priority designation were re-designated as Priority actions until the NHEP Board has opportunity to prioritize these late-coming actions. This should be addressed in the next annual cycle as the Board considers the suggestions for additional Action Plans that came through the public comments on the Draft *Plan*.

Calls for Additional Action Plans

The NHEP Board will consider several additional Action Plans that were suggested in the public comment period for the Draft *NHEP Management Plan*. The dynamic nature of estuarine systems and resources compels the NHEP to re-evaluate priorities, Action Plans, and funding opportunities from time to time. The NHEP intends to implement its *Management Plan* flexibly, re-evaluating Action Plan priorities during the development of each yearly work plan.

Suggestions were received to develop an Action Plan:

- 1 That addresses oil spill prevention, response, and research.
The Action Plan should include:
 - Oil spill response plans including preparation and training for sinking oil types and other hazardous materials brought into the estuaries.
 - A predictive model for oil spills.
 - More Action Plans regarding assessment of oil spill impacts.
 - Consideration of reimbursement by oil spill sources for damages and the cost of repairs.
 - Consideration of legislation requiring funding by oil spill sources for follow-up studies of the effects.
- 2 For bio-monitoring. Bio-monitoring may be one avenue to assess the cumulative impacts in addition to physical and chemical changes that may occur.
- 3 For the development of private landowner incentives for practices that protect wildlife, plants, and natural communities.
- 4 For instituting a routine Household Hazardous Waste Recycling program.
- 5 That addresses the impacts in terms of water quality and quantity for power plants on the Piscataqua River.
- 6 For agricultural issues: develop and implement nutrient management plans and Integrated Pest Management programs.
- 7 For fish habitat. Many of the estuarine habitats such as eelgrass, mud flats, and riparian areas should have action plans that address protection and restoration of these areas.
- 8 For the restoration of anadromous fish.
- 9 For invasive species control. Identify and control invasive plants within the project area that threaten important habitats.
- 10 To update the Strafford County soil survey.
- 11 For the problem of sites for septic haulers to dispose of waste that considers a regional solution.
- 12 That addresses the recommendations of the NHEP Base Program Analysis that were not covered in this document.

Comments on Land Use and Habitat Protection issues

Will the success of the project lead to higher property taxes (e.g., through the establishment of a water authority)?

It is not the intent of the NHEP to generate new legislation at the state or local level. From the beginning the NHEP has worked to effect positive environmental outcomes through education and the promotion of careful, natural resource-based planning at the state, community, and individual levels. If implementation of *Management Plan* succeeds in improving estuarine water quality, there is a chance of property tax increases resulting as property values near cleaner estuarine waters increase. It is not the desire of the NHEP to create tax increases through new assessments to support the water quality or other natural resource-based projects.

The review and possible revision of master plans, land-use policies, and zoning ordinances should be given a higher priority. More emphasis on achieving uniformity of regulations, etc. across the various communities (including in Maine) in the estuaries' watershed. Need a procedure for checking septic systems after they are built. Concern that stormwater systems are not being built as planned/approved.

Action LND-6B calls for a comprehensive review of the land use policies and regulations for all 43 towns in the NHEP study area with specific attention to regulations that might promote sprawl development and impair water quality. Action LND-6B is ranked High Priority in the final version of the *NHEP Management Plan*. While a thorough region-wide review would provide a valuable planning tool, smaller scale community-specific reviews may also be conducted as part of Actions LND-5, LND-22, LND-25C. Master plan reviews, community visioning and careful consideration of existing land-use policies and zoning ordinances are fundamental to the community-based outreach activities of Action LND-5.

The NHEP Base Program Analysis (BPA) examined the regulatory and management framework pertaining to growth, development, and natural resources in the Zone A communities (17 towns with tidal frontage plus Rochester and Somersworth). The BPA found wide variations in the comprehensiveness of local land-use and natural resource protection regulations. The BPA recommended improvements to resource protection regulations. These improvements focus on regulation of shorelands, tidal and non-tidal wetlands, stormwater management, erosion, and other non-point source controls. These issues are discussed in Actions LND-8A, LND-14, LND-16, LND-20, LND-22, LND-25, LND-25C, WQ-9, WQ-10.

A recurring theme of the BPA was that lack of implementation of existing regulations has as much influence on water quality and natural resources as the inconsistency of local regulations. This problem is usually attributed to tight municipal budgets, excessive workloads for largely volunteer board and commission members, and lack of time or money for needed technical training. The *NHEP Management Plan* presents a number of actions designed to address these funding and information gaps, and provide assistance for the review of local ordinances and regulations. (Actions WQ-4A, WQ-4B, WQ-6, WQ-8, WQ-9, WQ-10, WQ-17, WQ-20, LND-2, LND-5, LND-6A-F, LND-8A, LND-11, LND-14, LND-15, LND-16, LND-20, LND-22, LND-25A-D, LND-28, LND-29, LND-32, LND-33, LND-36, RST-5, EDU-3)

Should more action plans and implementation funds be targeted for land-related activities such as buying land and/or easements? Who will coordinate the management of purchased and easement lands around the estuaries?

The NHEP cannot use Federal Clean Water Act Funds to secure easements or purchase land for conservation. NHEP implementation funds may be used for the background natural resource evaluation and legal research required for purchases of land or conservation easements. Actions LND-27, LND-29, LND-31, LND-33, and LND-36 directly or indirectly support the purchase of lands or easements for conservation of natural resources and open space.

Conservation lands and easements in the Great Bay and coastal watersheds are held and managed by a variety of state, local, and nonprofit entities such as NH Fish and Game Department; NH Department of Agriculture, Markets and Food; conservation commissions; community land trusts including the Rockingham Land Trust and Seacoast Land Trust; Rockingham County Conservation District; the Great Bay Resource Protection Partnership; the Audubon Society of New Hampshire; the Nature Conservancy; the Society for the Protection of New Hampshire Forests; and others. These groups are loosely coordinated, but their collective holdings have been catalogued to some extent in the State of New Hampshire GRANIT Geographic Information Systems (GIS) database. Some community properties, smaller holdings, and lands not protected in perpetuity may not be included in the database.

Each land acquisition and conservation easement arises from a unique set of circumstances. These circumstances are reflected in the details of the land transfer arrangement and often document the specific intent of the landowner or previous landowner, and the mission of the governmental agency or conservation organization taking responsibility for the property or easement. The unique conditions surrounding each land transfer may make coordinated, blanket management strategies impractical. However, as the amount of permanently held conservation lands in the estuarine watershed increases, there may be instances where collaborative management will be required or advisable. To date, the region's conservation land managers have demonstrated the expertise and ability to address situations that arise. If the need for regional coordination is identified, state agencies such as NH Fish and Game and the NH Office of State Planning or nonprofit organizations such as the Nature Conservancy, the Society for the Protection of New Hampshire Forests or the Great Bay Resource Protection Partnership may be able to oversee such an effort.

The maps in Action LND-1 have not yet been produced. To produce them will increase the cost of this action plan significantly.

An additional \$20,000 was added to the estimated cost of Action LND-1 to reflect the expense of producing maps of second order subwatersheds and impervious surfaces by subwatershed.

Create a composite digital tax map of the estuarine watershed from the ones already created for each community in the region.

Digital tax maps for each community in the estuarine watershed would be useful tools for local planning. Creation of these maps does present some technical challenges due to the state of many of the existing tax map archives. Overlapping and digitizing maps that have evolved over decades does not result in the precision required for use in site-specific planning or for comparing with the state GIS data layers that are generated at a much larger scale. However, the value of this type of planning tool is indisputable and the NHEP will look to promote this or similar tools through the implementation of Actions LND-6A through F.

Action Plan WQ-4B calls for a community-based GIS mapping effort to record the sanitary and stormwater sewer infrastructure in Seacoast communities. This information, generated and updated by municipal personnel trained by UNH educators, will be verified and maintained in databases at the regional planning commissions.

Comments on Water Quality issues

Plan should refer to specific areas of nitrogen pollution and eutrophication (e.g., North Mill Pond, South Mill Pond, head of tide areas just above dams, and areas near sewage treatment plant outfalls) and what to do about them (such as more natural flushing in the two mill ponds).

While nutrient contamination does not appear to be an immediate widespread threat to New Hampshire estuaries, continued growth and development will likely increase the threat of nutrient over-enrichment to estuarine waters. The *Plan* calls for ongoing nutrient monitoring in estuarine waters with particular attention to sensitive areas and specific locations already exhibiting effects of seasonal nutrient over-enrichment. More specific reference to the effects of nitrogen pollution in North and South Mill ponds in Portsmouth and in the impoundments behind the dams at the heads of tide on the Salmon Falls, Cocheco, Oyster, and Lamprey rivers has been added to *Chapter 4: Water Quality*.

Wastewater treatment facilities: Should dealing with the discharge from wastewater treatment plants be made a higher priority? Consider changing the location of the effluent discharge from wastewater treatment plants. Think about regulation that would allow smaller scale wastewater treatment facilities in certain situations.

The High Priority ranking for all wastewater treatment facility (WWTF) Action Plans (Actions WQ-1, WQ-2, WQ-3) reflects the importance of wastewater treatment facility issues for the NHEP. Action Plans WQ-2 and WQ-14 call for the investigation and adoption of new and innovative technologies for wastewater treatment facilities and septic systems respectively. As these Action Plans are implemented, topics such as relocating WWTF discharges or combined effluent discharges will be considered along with other innovative technologies such as UV alternatives, micro-filtration, and small-scale WWTFs.

Need more research re: the nutrient loading of the estuaries via groundwater. The problem is exacerbated by an increasing number of septic systems.

Groundwater has been suggested as a significant source of nutrients and possibly dissolved toxics to the estuaries, and two Highest Priority Action Plans address this issue. First step in determining groundwater nutrient loading is to build a regional groundwater model, which is being developed (Action LND-18) as part of a UNH/CICEET project "Inflow and Loading from Groundwater to the Great Bay Estuary." Action Plan LND-18 acknowledges the CICEET project and suggests NHEP funding of an extension of the model to the Hampton-Seabrook Estuary. Action Plan LND-19 offers two strategies to eliminate and prevent groundwater contaminants. One strategy builds upon the CICEET model and identifies sensitive areas with respect to land use and preferential pathways. A second strategy utilizes existing information gathered by NH DES as they identify Source Water Protection areas in the Great Bay and coastal watersheds. With sensitive areas identified and contamination threats better defined, preventative and remedial actions may be taken.

GIS mapping of water and sewer systems is very difficult to keep up to date and properly maintained.

The NHEP has identified contaminated stormwater discharges and sanitary sewer/stormwater illicit connections as very high priority issues as they contribute pathogens, nutrients, and to a lesser extent, toxic contaminants to the estuaries. The sewer and stormwater infrastructure of the region has evolved over time with the growth of Seacoast communities. Infrastructure development often reflects the best available technology of the time, and extensions, repairs and routine maintenance have altered original designs and provided partial upgrades. Records of these activities span decades and survive in a variety of forms. GIS technology is a valuable new tool for organizing and managing water and sewer infrastructure information, but managing this data is difficult. Action Plans WQ-4A, WQ-4B, and WQ-6 all contribute to building the capability needed by municipalities, regional planning commissions, and the responsible state agencies to develop, maintain, and verify data layers documenting the water and sewer infrastructure throughout the Great Bay and coastal watersheds.

Comments on Outreach and Education issues

Work one-on-one with individual communities on an ongoing basis.

Municipal decision-makers were identified early on as perhaps the most important single audience for the NHEP. The NHEP is committed to working directly with the 43 communities within the estuarine watershed, with special emphasis on the 19 Zone A municipalities. The *NHEP Management Plan* presents numerous actions developed to deliver important natural resource, land-use planning, and water quality information and assistance through new and proven methods to local decision-makers in the region. (Actions WQ-4A, WQ-4B, WQ-6, WQ-8, WQ-9, WQ-10, WQ-17, WQ-20, LND-2, LND-5, LND-6A-F, LND-8A, LND-11, LND-14, LND-15, LND-16, LND-20, LND-22, LND-25A-D, LND-28, LND-29, LND-32, LND-33, LND-36, RST-5, EDU-3)

Comments on Shellfish Management and Resource issues

Some shellfish action plans are not prioritized.

Shellfish Action Plans identified in the final Plan as SHL-2, SHL-3, and SHL-9B-D were being revised late in the process of developing the Draft *NHEP Management Plan*, and could not be prioritized by the Management Conference in time. These Action Plans have been designated as Priority actions in this final version of the *Plan*, with the understanding that in the next annual NHEP cycle the NHEP Board will review their prioritization as they consider additional Action Plans suggested through the public review process.

Some shellfish action plans should be rewritten and/or combined.

While the language in some shellfish action plans has been modified to reflect the NH Fish and Game Department concerns regarding content and NH F&G's role in implementing some Action Plans, the NHEP Management Committee chose to let the existing shellfish Action Plans stand. The Management Committee felt that any necessary refinements could be made through the Request for Proposals and the contract process that will finalize many of the implementation agreements.

Planning Reports

1. Development of draft Comprehensive Conservation and Management Plan Chapters for Pollution, Coastal Natural Resources, Indicators of Environmental Quality, Recreational, and Economic Development Issues (Audubon Society of New Hampshire)
2. Regulation and Management of New Hampshire's Estuaries: A Base Program Analysis Summary Report (NH Fish and Game Department)
3. Regulation and Management of New Hampshire's Estuaries: A Base Program Analysis (NH Fish and Game Department/Great Bay National Estuarine Research Reserve)
4. NHEP Management Plan, Executive Summary (NHEP)
5. Critical Lands Analysis (UNH Complex Systems Research Center)
6. NHEP Monitoring Plan (UNH Jackson Estuarine Laboratory)
7. NHEP Implementation Strategy (UNH Program on Consensus and Negotiation)
8. Development of Priority Issues, Action Plans, and an Implementation Strategy for the NH Estuaries Project Management Plan (UNH Program on Consensus and Negotiation)
9. NH Estuaries Project Outreach Strategy (Seacoast Science Center, NHEP)
10. Draft Data Management and Access Strategy for NH Estuaries Project (UNH Jackson Estuarine Laboratory)

Natural Resource Reports

11. NH Estuaries Project Shoreline Habitat Condition Assessment (UNH Sea Grant Cooperative Extension)
12. Testing of Great Bay Oysters for Two Protozoan Pathogens (NH Fish and Game Department)
13. Natural Resource Inventory, Evaluation, Mapping, and Outreach in Newmarket, NH (Town of Newmarket Conservation Commission)
14. Edmond Avenue Wetland Restoration Project (City of Portsmouth Public Works Department)
15. Testing of Great Bay Oysters for Two Protozoan Pathogens (NH Fish and Game Department)
16. Resource Protection Evaluation (NH Fish and Game Department)
17. Fairhill Salt Marsh Restoration Project (Town of Rye Mosquito Control Commission)
18. Development of a Shoreline Checklist for Volunteers Assisting in Sanitary Surveys (UNH Jackson Estuarine Laboratory)

19. Assessment of Clam (*Mya arenaria*) Populations in the Great Bay Estuary (UNH Jackson Estuarine Laboratory)
20. Northwood Wetland Inventory and Prime Wetland Designation Project, Northwood, NH (Town of Northwood)
21. Recreational Softshell Clam Harvest Survey (NH Fish and Game Department)
22. Resource Protection Evaluation (NH Fish and Game Department)
23. Reclamation of a Gravel Pit Located in the Fork of the Confluence of the Branch River and Jones Brook to Protect and Enhance the Riparian Buffer and Wetland (Town of Milton Planning Board)
24. Little River Marsh Restoration/Landowner Education Project (Town of North Hampton)
25. Cross Beach Road Stormwater Drainage Project (Town of Seabrook)
26. Assessment of Shellfish Populations in the Great Bay Estuary (UNH Jackson Estuarine Laboratory)
27. Great Bay Oyster Harvest Survey (NH Fish and Game Department)
28. Recreational Softshell Clam Harvest Survey (NH Fish and Game Department)
29. Restoration of Clam Habitat in the Hampton-Seabrook Estuary (UNH Sea Grant Cooperative Extension)
30. Edmond Avenue Stormwater Management/Marsh Restoration Project (City of Portsmouth)
31. Clam Population Assessment in Back Channel, Portsmouth (UNH Jackson Estuarine Laboratory)
32. Piscassic Breeding Bird Survey (Audubon Society of New Hampshire)
33. Shellfish Habitat Restoration Strategies for New Hampshire's Estuaries (UNH Jackson Estuarine Laboratory)

Water Quality/Pollution Reports

34. An Investigation of Water Quality in New Hampshire Estuaries (NH Department of Environmental Services)
35. Bellamy River and Little Bay Shoreline Survey: Fecal Coliform and pH Analyses (UNH Jackson Estuarine Laboratory)
36. Analysis of Water Quality Data for New Hampshire Shellfishing Waters (UNH Jackson Estuarine Laboratory)
37. Cains Brook and Mill Creek Watershed Study (Town of Seabrook Conservation Commission)
38. Odyssey School/Hampton Harbor Water Quality Assessment Project (Odyssey House, Inc.)
39. State of the North Mill Pond, Portsmouth, NH (Advocates for the North Mill Pond)
40. Riverside Drive Restoration Project (City of Dover Community Services Department)

41. Sanitary Survey for Lower Little Bay, Located in Newington, Dover, Madbury, and Durham (NH Department of Health and Human Services)
42. New Hampshire Estuaries Project Volunteer Shoreline Sampling and Habitat Survey (UNH Sea Grant Cooperative Extension)
43. Odyssey School: Hampton Storm Drain Outflow Report (Odyssey House, Inc.)
44. Water Quality and Rainfall Analysis Supporting Sanitary Surveys in Hampton Harbor and Great Bay (UNH Jackson Estuarine Laboratory)
45. NH Estuaries Project: Volunteer Shoreline Field Assistance and Data Management (UNH Sea Grant Cooperative Extension)
46. Pollution Source Identification in Coastal Watersheds (NH Department of Environmental Services)
47. Sanitary Survey of the Hampton-Seabrook Estuary (NH Department of Health and Human Services)
48. Water Quality Assessment of Stormwater Control Systems: Bacterial Phase Partitioning in Stormwater (UNH Dept. of Natural Resources)
49. Stuart Farm BMP Installation (NH Department of Environmental Services)
50. Newmarket Sewage Cross Connection Identification and Elimination (Town of Newmarket)
51. Dover Sewage Cross Connection Elimination (City of Dover)
52. Bellamy River Shoreline Status Report (NH Department of Health and Human Services)
53. Atlantic Coast Sanitary Survey (NH Department of Health and Human Services and NH Department of Environmental Services)
54. Elimination of Illicit Connection in Coastal New Hampshire Spurs Controversy (NH Department of Environmental Services)
55. Analysis of Physiochemical Water Quality Data for New Hampshire's Shellfishing Waters (UNH Jackson Estuarine Laboratory)
56. Water Quality Analysis Supporting Sanitary Surveys of New Hampshire's Atlantic Coast and Great Bay (UNH Jackson Estuarine Laboratory)

Education/Outreach Reports

57. 1997 Environmental Projects in New Hampshire's Estuarine Watersheds: NH Estuaries Environmental Network Conference, November 13, 1997 (NH Estuaries Project ; NH Coastal Program)
58. The Clam Hotline as a Shellfish Informational Resource for Public Outreach (NH Fish and Game Department)
59. Shoreland Outreach Activities (Seacoast Science Center)
60. Epping's Lamprey Watershed Program (Town of Epping)
61. State of the Estuaries Report (NHEP/Seacoast Science Center)
62. NH Estuaries Project Outreach Strategy (NHEP/Seacoast Science Center)
63. Design of a Walkway to Improve Salt Marsh Education on the Odiorne Farm Portion of Odiorne State Park (Friends of Odiorne Point State Park)

64. Implementing Effective Land Stewardship Programs (Audubon Society of New Hampshire)
65. A Listing of Agricultural Producers in Strafford County (Strafford County Conservation District)
66. Public Outreach Education in the Cocheco River Watershed (Strafford Regional Planning Commission)
67. New Hampshire Estuaries Project Public Outreach Activities for FY97 (Seacoast Science Center)

Administrative/Miscellaneous Reports

68. Progress Report on Graphics Production for the NH Estuaries Project (UNH Complex Systems Research Center)
69. A Technical Characterization of Estuarine and Coastal New Hampshire (UNH Jackson Estuarine Laboratory)
70. Federal Consistency Review (Carl Paulsen)
71. NH Estuaries Project Map Production: Final Report (UNH Complex Systems Research Center)

For copies of any of these reports, please contact the NH Estuaries Project at 603-433-7187.